Vol. VIII

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1936

No. 539

THE OHIO BELL TELEPHONE COMPANY,
APPELLANT,

vs.

THE PUBLIC UTILITIES COMMISSION OF OHIO

APPEAL FROM THE SUPREME COURT OF THE STATE OF OHIO

FILED NOVEMBER 20, 1936.

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INDEX.

Proceedings before Public Utilities Commission of Ohio, No. 3307 and consolidated proceedings—Continued.
Statement of oral evidence in "Toll Rate Case" No. 124—Continued

	Original	Print
Testimony of—Continued.		
A. J. Allen	8106	5213
A. B. Crunden	8194	5271
Cyrus S. Eaton	8329	5358
A. B. Crunden (recalled)	8391	5400
Colloquy	8447	5437
Testimony of W. F. Sloan..(omitted in printing)..	8459	
W. T. Anthony	8580	5444
Benjamin T. McBurney	8628	5477
G. A. Kositzky	8648	5490
Benjamin T. McBurney (recalled)	8669	5504
G. A. Kositzky (recalled)	8673	5507
F. L. Rhodes (recalled)	8802	5589
G. A. Kositzky (recalled)	8963	5681
A. B. Crunden (recalled)	9108	5806
A. J. Allen (recalled)	9258	5909
W. T. Anthony (recalled)	9422	6022

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—8615-C

Mr. Burr: And there was no evidence in that case as to the cost of the services.

Mr. Shuler: But because the defendant makes a weak case does not make the opinion good law, especially when Justice Clark covered most—Oh, well that is argument.

Mr. Burr: I will see what can be done on the subject, although we do not want to spend a great deal of time looking for information which is not in my judgment relevant to the case.

[fol. 8096] Mr. Shuler: Just on that, it is going to be stricked out, and we would like to know what we have to be prepared to meet as early as possible, because we do not want to hold up these hearings, or hold up the Commission.

Commissioner Poor: I do not suppose there is any way of requiring the company to give us specific information as to what they will produce. We will know that when they produce it.

Mr. Shuler: The question whether or not they are going to do it voluntarily or whether we are going to be compelled to get it otherwise. I would like to know at as early a date as possible the time the commission is going to compel us to go ahead, and I — simply asking it primarily so as to know whether we will have co-operation or opposition in getting it. If we are going to have opposition in getting it, we will start out right away to get it. If we are going to have co-operation we will not do that. I think in all rate making cases, cost of the service is always taken in as an element of the charge. The same way in this case. I think the cost of the services is an element to be taken into consideration by the Commission, if not the sole thing in fixing the price to be charged these companies.

Commissioner Poor: Mr. Shuler, you can elicit that from the representatives of the company if you can, but I do not believe the commission at this time would call upon the company to indicate everything that they will put in in their case [fol. 8097] before hand.

Mr. Shuler: But could not the Commission do this, if it so thinks, to insist that in this matter the A. T. and T. should lay all its cards on the table so to speak, and if they show any inclination not to do so, the Commission is going to take a different attitude towards it. In other words we can often do some things practically that may be we cannot do in another way. It is like a fellow in Jail. You can't put him in but he is there.

Commissioner Poor: The Commission wants all of the facts.

Mr. Shuler: I think so, too, and I think if the Commission will indicate to the A. T. and T. that it thinks it is fair that it should do that, counsel will give it to us. If the Commission on the other hand says to the A. T. and T, "We are helpless in this matter and we can do nothing, they will take a contrary attitude, and say, "We cannot get it for you". I think if this Commission will indicate to Mr. Burr that they would be much chagrined to find that the A. T. and T. would not furnish us that information, Mr. Burr will see that we get it.

Commissioner Maullar: It is up to the A. T. and T. to fix their case.

Mr. Shuler: That is what I think.

Commissioner Poor: There is no question about that.

Mr. Shuler: If the Commission takes the position that it [fol. 8098] is up to them to make the case, that is one question.

Mr. Burr: The duty is on the Ohio Bell Telephone Company to justify the charge. That we propose to do.

Mr. Kinnison: The witness has testified generally as to the class of the service for the A. T. and T. He has gone into the budget. He has not detailed items. Mr. Shuler wants to go into these items to see from whence comes the total. I think that is entirely competent and I think it should be furnished.

Mr. Shuler: For instance if I read the Public Utility report correctly in 1921 the A. T. and T. took in $17,000,000.00 from the associated companies and expended about $9,000,000.00, giving them a net profit of $11,000,000.00.

Mr. Burr: You are mistaken in that.

Mr. Shuler: That is what I want to find out and you are the only ones that I know of that can furnish the information.

Commissioner Poor: If they have not produced the figure that you think they ought to produce, and you desire information, the Commission will then pass on the question as to whether this is proper information, and they will produce it upon our order.

Mr. Harshman: Isn't this proper cross-examination? It certainly is in view of the testimony that the witness has already given.

Commissioner Poor: We have not reached that question.

[fol. 8099] Mr. Harshman: We have not reached it, but Mr. Shuler's idea is merely to have the matter prepared, so that it can go forward without delay. What is the use of having Mr. Rhodes come here when we come on for cross-examination, asking these questions, and finding he has not got the information? Then that means he will have to come back at some later date. That all means delay. Whereas, if it was understood at the present time that the matter could be cleaned up at one cross-examination, and a great deal of time for the Commission and the various counsel represented here saved, that is the idea Mr. Shuler has in mind, I am sure. It is certainly *I* wish to present to the Commission.

Commissioner Poor: The matter is not definite enough for us to pass on it, Mr. Harshman.

Mr. Harshman: I think the Commission has ample power as far as that is concerned from the statute.

Mr. Shuler: So do I. Another thing I want to call the Commission's attention to, and I do not want to be pettifogging in this matter at all—Mr. Rhodes has testified to my personal knowledge for six years before courts and Commissions, and perhaps much longer than that. In every one of those cases I take he has been asked these very questions and has always said he did not know. Now I am only bringing it to the Commission for this reason. It shows to me that Mr. Rhodes does not want to know and he purposely avoids trying to learn anything about it, because Mr. Rhodes [fol. 8100] was asked five years ago these very questions and he said he did not know. I do know that in other cases, Mr. Rhodes, you have testified in, you have been asked the same questions and said you did not know. I simply say this, that Mr. Rhodes is the witness for the A. T. and T., but I think it comes in very poor grace from Mr. Rhodes and from the A. T. and T. to have a witness here who knows he is going to be asked certain questions, and he testifies as to certain phases of the questions, purposely and designedly ignorant of the fact that he knows the Commission ought to know, and that he knows he is going to be asked. Now that is my point.

Commissioner Poor: I can see what you have in mind, but the Commission has no knowledge of that kind and we cannot pass on the question until it comes before us. When the question comes before us we will pass on the admissibility or the competency of it.

Mr. Burr: I do not think the remarks about Mr. Rhodes are quite justified. Mr. Rhodes is not an accounting man and has nothing to do with the accounting. He has certainly given the Commission such knowledge as he has on the subject.

Mr. Shuler: Mr. Rhodes told me this morning that he had been asked these questions before.

Mr. Burr: Yes, that is quite true. Suppose he knows nothing about them? If the shoe was on the other foot, you would be on your feet objecting to the competency of the witness.

[fol. 8101] Mr. Shuler: Let me ask for the purpose of bringing the matter to the Commission's attention at this moment, Mr. Rhodes, are you able to tell the Commission the expenditures of the General Staff during the past five years?

The Witness: No. I have already told them all that I know about it.

Mr. Shuler: Are you willing to bring to this Commission that information?

The Witness: I have not had access to it myself.

Mr. Shuler: You can get in can't you?

Mr. Witness: I can go back and report to the superior officer that I report to that I have been asked the question.

Mr. Shuler: He can give it to you if he is willing?

The Witness: But I cannot go around to all the departments through the company and say, "Give me this thing and that thing." That is out of my line of work.

Mr. Shuler: You have testified here that you knew something of the legal services rendered by your Staff did you not?

The Witness: Yes.

Mr. Shuler: You had to go to another department to get that?

The Witness: I know that this — going on.

[fol. 8102] Mr. Shuler: Answer the question.

The Witness: Yes.

Mr. Shuler: They gave it to you?

The Witness: I didn't go to another department on that. I knew it was going on.

Mr. Shuler: When the accounting matters came up you had to go to another gentleman did you not?

The Witness: As to what the accounting department is doing?

Mr. Shuler: Yes.

The Witness: Oh, yes, I have talked that over to other people.

Mr. Shuler: Will you bring this information?

The Witness: I cannot say whether I can or not.

Mr. Shuler: Can you tell us who will give us the information?

The Witness: I don't know who can. I can go back and say I have been asked for it.

Mr. Kinnison: This matter is a matter of complete record in your office?

The Witness: I do not know that it is. I think it has to be made on the basis of apportionments, and assumptions.

Mr. Shuler: Assumptions particularly.

The Witness: I think so. It would have to be made on assumptions as to how it would be divided, as to how certain expenditures would be divided.

Mr. Burr: Of course it does. Anybody who knows any- [fol. 8103] thing about services of that kind must realize that fact.

Mr. Kinnison: Do you know anyone in your organization who is competent to testify on it?

The Witness: The only man I know who has ever testified on that is one of our vice presidents who was subpœnaed in New York case.

Mr. Kinnison: Who is he?

The Witness: That was Mr. Gifford.

Mr. Kinnison: Is he still with the organization?

The Witness: He is, yes.

Mr. Kinnison: What are his initials?

The Witness: W. S.

Mr. Kinnison: What is his address?

The Witness: 195 Broadway.

Mr. Kinnison: Is he in the accounting department?

The Witness: No, he is operating vice-president, executive vice-president I should say.

Mr. Shuler: Doesn't this company do business in this way in this State in such shape that you can get service on them? They have contracts with the corporate subsidiaries in this State. I think they are doing business in this state. Very slight things have been held by the court to constitute doing business in the state.

Mr. Kinnison: They have property in the state.

Mr. Shuler: But it seems to me the practical hold you have on the subject is the one to use, and that is they will [fol. 8104] not dare to refuse this Commission this information if this Commission will ask for it.

Commissioner Poor: I do not know that they will, Mr. Shuler. The Commission does not know whether the company intends to put this matter in.

Mr. Shuler: Can Mr. Burr give us an answer in a day or so?

Mr. Kinnison: It is apparent that they do not. The witness said that he did not know and there is only one man that does know.

Commissioner Poor: This witness said he did not know. I am sure this member of the Commission will not tell them what they shall put in the case. Wait until they get through their part of the case.

Mr. Burr: Would you like to have Mr. Gifford's testimony in the New York case?

Mr. Shuler: Yes, that is precisely what I would like to have.

Mr. Harshman: No, Mr. Gifford himself.

Mr. Shuler: I would like to have his testimony myself personally. Will you give that to me?

Mr. Burr: I don't know whether I have a copy or not. If you are through with Mr. Rhodes, Mr. Allen may take the stand.

Mr. Kinnison: I want to ask him one or two questions which he has promised to answer for our records. What is the list price from the Western Electric Company to the American Telegraph Company of the transmitter?

[fol. 8105] The Witness: This is the price that the American Company pays, or the open market price.

Mr. Kinnison: The cost to you?

The Witness: The American Company pays the Western Electric Company for the 323 transmitter, $1.48.

Mr. Kinnison: And the receiver?

The Witness: For the 144 receiver, $1.37.

Mr. Kinnison: The induction coils?

The Witness: 46 induction coil, $.57.

Mr. Kinnison: How does that compare with the list price in the general market?

The Witness: The price to the general trade for the corresponding transmitter, which is Number 323-BW is $2.00;

for the 144 AW receiver $2.05; for the number 46 induction coil 85 cents.

Mr. Kinnison: That price is as of what date?

The Witness: As of January 1st, 1924.

Mr. Kinnison: Thank you sir. Is that subject to any further discount?

The Witness: To my best knowledge and belief, no.

[fol. 8106] And also ARCHIBALD J. ALLEN, called as a witness, on behalf of the Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. I believe you were sworn Monday, Mr. Allen?

A. Yes.

Q. You may state your name?

A. Archibald J. Allen.

Q. Where do you live?

A. I live in New York City.

Q. What is your occupation?

A. I am a traffic engineer with the American Telephone and Telegraph Company.

Q. Are you a member of the General Staff of that company?

A. I am.

Q. What telephone experience have you had, Mr. Allen?

A. I started work with the Central District and Printing Telegraph Company, which was the Bell operating company in Pittsburgh in August, 1907. For about one year I was in the office of the chief service Inspector of that company. For the following year I was a district traffice chief in the district of that company which operated the old city of Allegheny, and for about one additional year, I was assistant district supervisor of traffic with headquarters at Butler, Pennsylvania. In 1900 I was offered a position with the American Telephone and Telegraph Company [fol. 8107] on the General Staff in New York City, and on August first of that year I started working on the General Staff in the section which handled the central office records and adjustments of force routines for the American Telephone and Telegraph Company.

Q. By those routines you have reference to the proper

routines and methods for providing the operating force with which to handle the traffice in the central offices of the company?

A. That section that I was working in had charge of the studies and the preparing of necessary instructions for carrying on that work on the part of the associated companies, yes.

Mr. Dotson: If you will state what you want this witness to testify to, we will be willing to let the record show that we accept his qualification to that extent, and you need not go through the routine of qualifying him.

Mr. Burr: We are just about through with the qualifications, and it will be short if I go on with the next question.

Q. When was it you entered that particular department of the American Company?

A. In August, 1910.

Q. What have you been doing since that time?

A. I continued work in that department until February, 1920, when I was placed in charge of the section handling that work, and since August of the year 1923, I have had general charge of the section of the traffic engineering department handling and responsible for traffic results throughout the associated companies.

[fol. 8108] Q. Are you familiar with the operating methods and types of equipment in use by the Ohio Bell Telephone Company in so far as those methods and equipment affect what are known as operators' loads?

A. I am. In the course of my work, I have visited a considerable number of the exchanges and many of the offices in the Ohio Company's territory and have in certain cases made rather extensive studies of some of the problems that are handled in the sections in which I have worked in these Ohio Company's offices.

Q. What do you mean by the terms, "traffic" and "traffic engineering" as applied to your business?

A. In Mr. Rhodes' testimony he referred to a great many of the elements making up the telephone plant, and for the convenience of operation, the telephone work is divided into various functions, plant, being one of the main functions, and the traffic work being another of the main functions. Traffic in the telephone system might be considered somewhat as the passenger traffic on a railroad, being the carry-

ing of passengers, or the freight traffic, the carrying of freight. Traffic in the telephone world is the actual handling of the telephone calls.

Q. And the carrying of the messages by means of wires?

A. The traffic engineering work consists in the specifying of proper types and quantities and arrangements of telephone equipment, not only the switchboards on which the calls are actually handled by operators, but the connecting trunks, which term we apply to the wires between [fol. 8109] local offices, and the toll circuits, which are the trunks connecting different cities or exchanges.

Q. Does the work of the engineers of the American Company cover traffic problems of different kinds which have to be met by the traffic engineers in the associated companies?

A. It does. The engineers of the general force work on the development of telephone equipments, on the development of methods of handling all of the classes of telephone calls in the most effect and economical way, considering first the actual needs and demands of the public and together with that the best methods for handling the calls in the most economical way and rendering this service which is being supplied. All the conditions under which the service is being given and the results which are being attained by the various companies are carefully studied, and the ideas developed,—The idea of producing any improvement in methods or to meet changed conditions and making any suggestions which it is thought from study of the conditions might improve the results. In addition to issuing various circulars, to the associated companies, which are considered to be helpful in the carrying on of their traffic work, the functions of our central engineering force also consist in helping the associated companies to overcome any problems of a special nature which confront them at various times.

Q. Do the traffic engineers of the General Staff work exclusively on problems for the associated companies?

A. The traffic engineering force works exclusively on [fol. 8110] development work which will be of assistance to the associated companies, and on the assisting of the associated companies and the Long Lines Department of the American Company, which department as far as our engi-

neering work is concerned is handled exactly the same as though it was an additional associated company.

Q. Does the Long Lines Department of the American Company have its own traffic engineers?

A. It does. It has a force of traffic engineers who are responsible for carrying on the field traffic engineering work in connection with the specifying of equipment necessary in the operation of the offices operated by the Long Lines Department.

Q. Do the associated companies of which the Ohio Bell is one have their own traffic engineers?

A. Yes, all of the associated companies, including the Ohio Bell, have a force of traffic engineers who are responsible for the field traffic engineering work in their respective territories, the necessary study and specifying of the types and quantities and arrangement of equipment to handle traffic in the offices in their territory.

Q. Is there any arrangement whereby duplication of work on the part of these engineers of the General Staff and the engineers of the associated companies is prevented?

A. The arrangement of the work in traffic is set up along this line. The engineers of the General Staff in New York are continually involved in making what might be termed basic studies, studies to determine whether some proposed [fol. 8111] new type of telephone switchboard or some proposed new method will be an improvement over present conditions, a constant study of switchboard development and method development to meet changing conditions, to supply the necessary information for field engineering, where new problems are coming up. The engineering of the associated companies, as the Ohio Bell, spend their time on the other hand in the actual field engineering. They have the instructions and results of studies covering all conditions which are of a continuous or periodic nature available, so that they can use this data as a basis for their field engineering.

This arrangement of the work is advisable for the reason that actual field engineering is of so pressing a nature that it makes development work and studies on the part of the man who is responsible for the field engineering rather difficult. The specific job crowds him to the point where he has rather limited time for studies and anything of the combination of actual engineering in field work with development

work generally result in old methods staying in effect longer than they should. It has a tendency to keep from progressing and improving the routine. So that on the basis of these conditions it has been found advisable to separate this work.

There is a further benefit from this separation, that development work of the nature we do can be done to a large extent at one time and made serviceable to all of the companies. The work of the same nature could undoubtably [fol. 8112] be done in the individual companies by the provision of additional engineers, who were set aside to work on that problem. Anything of that kind would mean a great duplication and waste, because the engineers would undoubtedly in different companies be working on parallel lines and doing work which can be better done at one centralized point, and then the results placed at the disposal of all the field engineers.

Q. What are some of the principal problems handled by the engineers of the General Staff?

A. The traffic engineering force of the General Staff is divided into four subdivisions, and I think I can probably give a brief idea of the general functions by outlining just briefly what each department does. One of these sub-departments is the local traffic engineering department. This department is responsible for the specifying of the types and quantities and arrangement of equipment which will best meet the problems confronted in giving local exchange service. It also works on the development of operating methods which are necessary in the giving of local exchange, and further provided definite operating practices which will be of use to the actual operating people in the local offices.

A second division of the general engineering force is devoted to toll traffic engineering. Similar to the local traffic engineering division, this department is responsible for studies in connection with the provision of toll switchboards and the studies of toll operating methods to meet [fol. 8113] the changing conditions under which toll business is handled. Further in a similar way *to* the local engineering force provides detailed operating practices in the toll offices so that the actual operation of the toll offices can be carried on in the most uniform and economical manner.

A third branch of the general engineering force devotes

its attention to the study of traffic results. This force studies and provides routine inspections for many of the problems which confront the actual management of telephone offices, the development of uniform records, so that the offices will know what are the necessary and best records to keep in the administration of those offices.

A fourth branch, and the last of the divisions of the traffic engineering is devoting its attention to special traffic matters, including the development of toll fundamental plan studies and including the development of methods for toll rate quoting and toll rate computing on the part of the toll operating forces throughout the country.

And thereupon a recess was had until 1:30 o'clock P. M. of same day (Wednesday, February 27th, 1924).

[fol. 8114] Wednesday Afternoon Session

February 27, 1924.

And also ARCHIBALD J. ALLEN, resuming the stand for purposes of examination in chief, continued his testimony as follows:

Examined by Mr. Burr:

Q. At the close of the morning session, you were stating some of the principal problems, Mr. Allen, met by the engineers of the General Staff and I think you have covered the four general groups. Are there any further groups or had you finished your answer?

A. I had finished. That covers the general outline of the set up in the general traffic engineering department.

Q. Will you please state some of the particular features bearing on the development of telephone switchboards and other central office equipment?

A. I have here some photographs of some types of switchboards which have been developed by the General Staff, and they are in general use throughout the Bell System. I would like to show a few of these photogrpahs and explain from those photographs some general ideas of the traffic work as a basis for certain development of switchboard data which I will give just a little later. I was not quite as liberal with these photographs as Mr. Rhodes. In some cases I have not more than a half a dozen copies, so that you

[fol. 8115] will probably have to pass them around a little bit if everybody wants to see them. This first exhibit is the front view of an A switchboard, which is known in our work as a number one common battery relay switchboard.

Mr. Burr: It may be marked for identification as Allen Exhibit Number 1, and is offered in evidence.

And thereupon the photograph above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Allen Exhibit Number 1, and made a part hereof.

Q. Explain the photograph Allen Exhibit Number One if you please?

A. This photograph shows a number of positions of a typical switchboard of the kind which is in use in cities such as Columbus and many of the other larger cities in Ohio. At the top of the switchboard are shown some numbers and these numbers are indicated a position at which an operator is seated. This board, looking at it near the bottom, has a shelf which is known as the switchboard key shelf, possibly somewhat as the shelf on a piano. The board in general set-up is somewhat the shape of an upright piano. This key shelf—On it you will notice various equipment. Towards the front of the key shelf are keys, which are used for ringing, and back of those, keys which are used for listening, and close towards the back of the key shelf are some [fol. 8116] plugs. Those are plugs which are the ends of cords which are used by the operator in putting up connections. One the face of the switchboard near the bottom are rows of white dots, ten in a row. Those represent the lamps which light when a subscriber removes the receiver from the hook. Just above each of those lamps, which is shown as a little black dot, is a cjeck into which the operator inserts one of the plugs of that row on her position in answering a subscriber. If that call then—She answers and gets the call from the subscriber—Is to her own office, she would take the mate to the cord on which she had answered that and locate in the upper part of the face of this board the called number. That part of the board is what is known as the subscriber's multiple and consists of a number of banks of 100 jacks. You will notice on the upright strips, which are known as style strips, some white dots, and on those

are the numbers, indicating the number of the particular hundred.

Looking at the face of this board just to the left of Number 20 you will notice a white line on one of the upright strips and the same white line just to the right of the Number 27. The space between there, consisting of eight strips of these hundreds of jacks, constitute what is known as a section of this board, and an operator sitting for example at position 28 and getting a call would either find the called number in the multiple in front of her or in position 29 to the left or position 27 to the right. For that reason an oper- [fol. 8117] ator getting a call in her own office, as for instance, in Columbus, a main to main call, would reach the called number either on the position, immediately in front or to the right or left.

Just below this multiple are what look like white strips, and under those are also a series of jacks, and that part of the board just above the white dots at the bottom where the subscribers' line signals come in, is what is known as the out trunk multiple. If the operator on answering the call would get a call for an office other than her own, as in Columbus, an operator getting in Main- a call for Franklin or some of the other offices, has to go in on a call circuit button. Those are the little white spots just as the left of each set of keys. The operator selects a button there which has initials on it indicating the office called and by pressing that button, is put in touch with the head-set of the operator in the distant office. That distant office assigns a number which corresponds to that on the out trunk multiple, that is the number jnst above the answering jacks. This number is taken up by the A operator by taking a corresponding pair of her cord and plugging in on that jack.

At this point I want to give you another exhibit showing the face and key shelf of what is known as a B board. This is the board that will be used by the operator in say Franklin on a call coming from the same office.

Mr. Burr: The photograph of the B board may be marked for identification Allen Exhibit Number 2, and is offered [fol. 8118] in evidence.

And thereupon the photograph above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Tele-

phone Company, and is herewith submitted, marked Allen Exhibit Number 2, and made a part hereof.

Q. Proceed?

A. This B board is a fairly simple arrangement, the number at the top again indicating the numbers of positions at which operators are seated. The operator of this board has ordinarily no contact with the subscribers. There is nothing similar to the answering jacks or any of that apparatus that is shown on the preceding exhibit. In this case the operators seated at a position, as position 12, receive their instructions over the call circuit from the A operator in the originating office, the A operator merely giving this operator the name of the office in which she is located and the desired number in this office. The operator in this office, who is termed the B operator, corresponding to the title of this board as a B board, assigns or tells the operator at the A board what trunk should be used in completing the call. This trunk, which appears as a jack in the A board, appears on this board as a single ended cord. The B operator having assigned a trunk, picks up a cord of the number which he has assigned and then in a multiple similar to the multiple which we have just seen on the A board locates the desired number. You will notice that again on [fol. 8119] this board we have the multiple in banks of 100, and the operator on this board takes up the plug and locates the number and plugs into the jack corresponding with the subscriber's number.

Q. Mr. Allen, in order to illustrate a given call and to put the illustration in my own language, will you tell me if my understanding of the switchboard situation is correct? Let us take, for example, an operator sitting in front of the Number 28 on your Exhibit Number 1. In the panel, the upright panel in front of her, commencing at the bottom, are six rows of white dots?

A. Yes, sir.

Q. Now if a subscriber, whose number is represented by one of those dots, desires to call another subscriber, as I understand it, when the calling subscriber removes the hook, that shows a light corresponding to his number in that panel?

A. The little lamp immediately lights, showing that there is someone wanting the attention of the operator.

Q. Now up to that time there is no talking connection with

anybody, simply the fact that the calling subscriber has removed the receiver from the hook has caused that lamp to light and show the operator that the calling subscriber needs attention?

A. Yes, sir, that is correct.

Q. Then the operator, in order to put herself into connection with the calling subscriber, takes one of the plugs which are standing up in rows and to which are attached cords and plugs into the jack or hole immediately adjacent to that [fol. 8120] subscriber's line lamp?

A. Yes, sir.

Q. Then that puts the operator and subscriber in communication with each other and the operator asks the subscriber for the number which the subscriber desires?

A. Yes, sir.

Q. If the subscriber is what we will call a main subscriber, that is to say, one directly connected with the main exchange, and if he desires a main number, that is, the number of another telephone terminating directly in the main exchange, the operator as I understand it picks up the corresponding plug to the one already plugged into the calling subscriber's jack and plugs into the multiple jack bearing the number of the called subscriber?

A. That is correct.

Q. And thereupon rings the called subscriber?

A. Yes.

Q. That is the way in which connection is made through this board between two subscribers whose telephones terminate directly in the same exchange.

A. And that is about the simplest type of telephone call we have to deal with. There are many variations of that. The operator may on going up the multiple find one of those little white spots or black spots in the multiple as you see on Exhibit Number 2; it may mean that the calling subscriber has a number of someone whose service has been discontinued or maybe away from the city or moved to some other zone. There are some complications of that kind. But the simplest call is the one which you have outlined.

[fol. 8121] Q. Those little white spots in the subscriber's multiple which you see indiscriminately like a lot of stars on a very clear night, represent some legend which tells a story about the telephone or the subscriber whose jack bears that spot?

A. Yes, or the number corresponding to that spot. It may be that the subscriber, as I say, has moved to some other part of the city and various things of that kind. That is denoted. There are various types of plugs. The white plug shows up more clearly in the picture. There are red and black plugs, indicating various conditions with that line.

Q. Let us go back to the main subscriber again and assume that that subscriber desires to talk with a subscriber whose telephone terminates in some other than the main board, for example, let us say Franklin. The Main subscriber, who is the calling subscriber, removes the receiver from the hook, the corresponding lamp lights in front of the operator, and the operator as heretofore—And I am talking about the operator at the Main exchange now—Plugs in and makes the connection between herself and that calling subscriber, and thereupon asks for the number as heretofore?

A. Yes, sir.

Q. When the subscriber asks for a Franklin number instead of the Main number, then if I understand you, it is necessary that in some way or another the Main exchange and the Franklin exchange be connected so that the subscriber's message may pass from the Main exchange to the Franklin exchange and from the Franklin exchange out [fol. 8122] over the wires of the Franklin called subscriber?

A. Yes, sir.

Q. Therefore the operator, instead of taking the corresponding plug and plugging into the jack in the panel in front of her, presses a call button?

A. Yes.

Q. And that puts her into immediate communication with the Franklin operator?

A. It connects her directly to the head set of the Franklin operator.

Q. And the Main operator then tells the Franklin operator the number of the called subscriber with whom the Franklin operator is desired to make the connection?

A. That is right.

Q. The Main operator, however, does not say to the Franklin operator, "Franklin such and such a number", but says, "Main such and such a number".

A. Yes, she does that to identify herself, because in many cases we have more than one office terminating on the same B operator and the B operator has to have something to show her where the call is coming from so that she can assign a trunk to the proper office.

Q. That is to say, the Franklin operator by being given a number connected with the Franklin Exchange which the calling subscriber desires and having had that number prefixed by the main operator with the word "main" knows by that that someone connected with the main exchange is desiring to call for a Franklin subscriber?

A. That is right.

Q. Therefore the Franklin operator knows that she must [fol. 8123] select a trunk which will connect the Main and the Franklin exchanges?

A. Yes, sir.

Q. As soon as the Franklin operator gets the call from the Main operator, if I understand it, she does what is called assigning a trunk, and gives to the Main operator a number?

A. Corresponding to the number of the trunk on which the call is to be completed.

Q. And that means that that is the trunk in use between the two exchanges, Main and Franklin, over which the call is to be completed, that that is to be the connecting link between the two subscribers?

A. Yes.

Q. And the Franklin operator must tell the Main operator the number of the trunk, because there are a great many trunks between the offices and any trunk won't do because one or more of them may be in service at the same time?

A. That is right.

Q. The Main operator then having told what trunk is to be used in making the connection, she takes the corresponding plug that we have been talking about and instead of plugging into a subscriber's multiple in front of her, plugs into the proper jack or the jack corresponding to the selected trunk, is that right?

A. The jack corresponding to the number which has been assigned to her by the B operator.

Q. Yes, and that connects the calling subscriber then with the Franklin exchange doesn't it and the Franklin operator, who is sitting at a B board, in the meantime has connected the selected trunk with the called subscriber's number?

[fol. 8124] A. She proceeds as soon as she assigns the number—She proceeds to take the cord corresponding to the number of the trunk she is assigned and makes the selection in the board. Sometimes the A operator will screw the plug into her trunk before the B operator has reached and plugged into the number, and at other times the B operator will beat the A operator and then she waits.

Mr. Kinnison: What is the purpose of all of this?

Mr. Burr: Because I have found in almost every case in which I have participated that there has been a great deal of interest showing exactly the method of making a telephone connection, and I have considered that this commission so far as I know have never heard this testimony and would be interested in it.

Mr. Kinnison: It is interesting, but I do not see how it affects the case.

Mr. Burr: The connection is practically made, so if you will bear with me a moment, I will be through.

Q. Now the connection having been thus established through from the Main calling subscriber to the Franklin called subscriber, the Main operator pushes the button which rings the bell in the called subscriber's premises?

A. No, in this particular case in the majority of the B boards the arrangement is such that the ringing starts automatically, and it is so arranged that the ringing does not start unless the B operator has plugged into the jack of the called party and the main operator has plugged into the [fol. 8125] jack of the Main office, thus avoiding instances where the operator finds she has a w-ong number or something of that kind. It avoids calling the party to the phone.

Q. That is the case here because in this particular board the ringing is automatic?

A. Yes, and if it were not automatic the B operator would do the ringing by pressing a proper key.

Without any particular further description I have one other exhibit here showing an A board with the operator actually working at the board and the various desks where people necessary to handle the office, such as chief operator, clerks and so forth are seated, and also showing the supervisors on the floor, which gives a very definite picture of the conditions in the central office, giving an idea of the size of a fairly typical unit.

Mr. Burr: It may be marked Allen Exhibit Number 3 and offered in evidence.

And thereupon the photograph above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Allen's Exhibit Number 3, and made a part hereof.

The Witness: These switchboards which I have shown you are the result of a continuous development over the years since the telephone was first put into commercial use. [fol. 8126] Nearly all parts of this board have been improved since this type of board was first placed in service. The cords for example which are shown on the key shelf have been improved. On the first boards of this type a cord with a steel core was used in order to have sufficient strength to stand the operations. The switchboard development people, working on this matter, experimental over a considerable period and developed a type of tinsel which was strong enough to serve the purposes required in the cord, and this from a traffic point of view was of very great value. In handling calls similar to the call which we have described here, even on this simplest type of call, going from the calling party to a called party in the same office, the operator spends about a third of her time in actually handling those cords, picking them up, making the connection and bringing them down, and the improved cords have made it possible to put up and take down a connection in one second less work per call than was necessary under the old style type of cords. You get an idea of the improvement or savings of that kind when you realize that our expense for operators' wages per year in the Bell system runs at the present time about $140,000,000.00, so that a saving of one second per call enabled us to have operators handle a correspondingly larger number of calls, and amount to very large proportions in a case of this kind by the saving of one second for handling a pair of cords, which is equal to about $7,000,000.00 per year in the expense of operators' [fol. 8127] wages in the associated companies.

Decided improvements have been made in the keys. In the early type of switchboards practically all of the ringing keys were on a push button type. Where there is any considerable amount of ringing, we have changed to improved keys that indicate when the key is in a ringing position,

indicate on party lines what party has been rung. This has made it possible to increase the number of calls which the operators handle.

Mr. Shuler: When were these two improvements made?

The Witness: They have been made over various periods. The first tinsel cords were put in about 1912. We have since improved those and put in still better types of cords. But they are not improvements which are made today and dropped there. They are a continuous study.

Mr. Shuler: I just asked you when they were made?

The Witness: Slight improvements are made from time to time. The supervisory signals. In connection with each pair of cords, there are two signals which shows the condition of the call. Those signals due to improved relays, have been greatly improved, so that the operator relays, have been greatly improved, so that the operator can depend on the signals and in that way improvements have been made in the loads that the operators can carry. One decided improvement was the introduction of machine ringing in B boards. That saves not only the individual operator's time on the first ring but saves it on subsequent rings. [fol. 8128] At the present time on the volume of traffic handled in the Bell system that saving amounts to about three and a half million dollars.

Q. That is a year?

A. Per year, due to the increased loads.

Mr. Shuler: When was this improvement made?

The Witness: About 1910, the first adaptation of that. Since that time we have improved that and made it adaptable to a great many more boards.

Mr. Shuler: Who were responsible——

Mr. Burr: Let the witness finish.

Mr. Shuler: I just asked him when it was made.

Mr. Burr: He was going on to say that since that time——

The Witness: Since that time the original use of that machine ringing on B boards has been greatly extended by developing arrangements to use it on boards having party line ringing and various conditions of that kind.

Q. Has any of that development occurred in the year 1923?

A. I don't think any bulletin has been issued on it.

Q. How much work have you done there?

A. There has been work done on it and additional boards converted to that method of ringing in 1923 in various cities throughout the country.

Mr. Shuler: You know who made that typical improvement originally? Wasn't it made by the independents [fol. 8129] originally?

The Witness: Not from my understanding.

Mr. Shuler: You don't know.

The Witness: I know that the original patents in connection with the machine ringing were taken out by the associated American Companies, not by the Independents, yes, sir. Another example of an improvement in equipment which has resulted not only in the decided improvement in expenses but also on the service which is given to the public has been the multicoin prepayment box at subscribers' stations. Under the old type of pay stations it was necessary for the operator to remain on a connection until the called party had answered and then get the calling party and have him deposit a coin. There were further delays often times by the fact that the calling party did not have the right change and had to go and get it and things of that kind caused delay to both the calling and the called subscriber and added work on the part of the operator. There are upward of two million calls a day handled at the present time from prepayment coin boxes, and in addition to the improved service to both the calling and the called subscriber, that means a saving in the work time of the operator which is equal to a million and a half dollars a year in the associated companies.

Q. In the first part of your answer you referred to subscribers' stations. You meant did you not pay stations?

A. Yes, I meant pay stations. We are inclined to use the word subscribers for anybody who is using one of our tele- [fol. 8130] phones, but I meant to refer to pay stations.

Q. Have you any further illustrations?

Mr. Kinnison: Pardon me at this point. May I ask a question or two?

Mr. Burr: Yes.

Mr. Kinnison: You testified by the introduction of this new kind of cord an operator was able to save a second on a call. Can you tell me the time necessary for each of the

elements making up a completed call, the time consumed by the operator in that performance?

A. There are in the neighborhood of—This would be a matter of judgment as to what the different elements of a call are.

Mr. Kinnison: Could you give them, Mr. Allen prior to the introduction of the tinsel cord and then at the present time with the use of the tinsel cord?

The Witness: Yes, the amount of work time on the part of an operator, prior to the introduction of this cord on this simplest type of call which I have outlined was eleven seconds.

Mr. Kinnison: That is within the same exchange.

The Witness: And it is now reduced to ten seconds. As I said about a third of the operator's time or about three and one half seconds, are now used in actually manipulating the cords, putting up the cords and taking them back down, and the rest of the time is used in manipulating the keys and actually talking with the subscriber, the proposition of saying "Number please" and then repeating the number back [fol. 8131] to the subscriber at the end of his giving the number, so that the total time of that call in that exchange as——

Mr. Kinnison: What part of the eleven seconds is taken up with the manipulation of keys?

The Witness: It just depends—It would depend somewhat on the type of board that you are talking about. There are a good many on this Number One board——

Mr. Kinnison: You started out to tell us about the A board.

The Witness: Well, it would be about a second and a half, that is, operating the key in connection with opening it to talk with the subscriber and assuming that the operator rings on that key after she had plugged in the subscriber's multiple.

Mr. Kinnison: Is that the same at the present time as it was prior to the introduction of the tinsel cord?

The Witness: We cannot measure those things when they get small fractions of seconds. It is not generally done that way. There is no object in dividing up the calls in establishing our operating methods and so on in that way. We do not find occasion to go to a proposition of timing the possible 12 or 15 elements that go to make up a call. It

would be more or less futile, because we have many overlapping propositions. We are constantly studying the proposition of so training our operators that they can do these things as an overlap proposition while they are doing the others.

[fol. 8132] Mr. Kinnison: As a general proposition you cannot tell the time necessary for an operator to perform any of *of* these functions necessary in the completion of a call.

The Witness: We are called from time to time to make studies of that kind, but it is our normal way. In the introduction of some new type of equipment we do under those conditions make detailed studies from the work of the individual calls; we do take time to study that individual operation; but it is not part of our regular routine.

Q. Why would overlap complicate the time of the individual elements going to make up the total time consumed by the operator?

A. In this particular instance as to which I have been asked the amount of time in operating a listening key, we find for instance on answering a call when the line shows light on her switchboard, she immediately reaches for the cord. With the other hand she -*knows* the key off. It is considerably a matter of judgment there, whether you are going to say that the operator spent a half second opening up the key while as a matter of fact she was using the other hand to pickup the plug. Is half of it chargeable to the key and half of it to the picking up of the plug?

Mr. Kinnison: How can you say so definitely that there is one second's time saved, because of the new type of cord?

The Witness: Because we have a large amount of ob-[fol. 8133] servations on which we have found the total amount of time that takes an operator to handle a certain number of calls before and after the introduction of the new cords. We make these in various ways. One is by the use of a cumulative stop watch, where we would get the total time it took an operator to handle these 100 calls. We are doing this all the time where we have a proposed new type of equipment. With a certain number of average experienced operators, we get the total amount of time that they take in handling a hundred calls under the existing equipment. Then we change over and after giving the

operators sufficient training to make them proficient on the new type of equipment or with the new method, we can time these same operators under similar conditions and get the total time it takes to handle a call. That is to my mind the fairest way to get an answer of that kind, because in that way you have found how the new feature fits into the total proposition of handling a call. Often times we do have suggestions of improvements in method and improvement in equipment which in itself might look like an improvement on a certain call, and yet you might make a number of calls and in that way find the net result on a hundred calls might be to take longer to do it, although one individual operator might be short. So you must look at the thing from the broad overall point of view to make sure you are not deceiving yourself on some item of handling a call.

Mr. Kinnison: Who makes this equipment, the one you [fol. 8134] spoke of?

The Witness: I assume the Western Electric. They make all of our equipment, which they sell to the subsidiary companies. They will supply it to the new switchboards and to the cases where they have worn out.

Mr. Kinnison: Do they sell it at cost?

The Witness: I assume they sell it at a fair profit under the contracts they have with the companies.

Mr. Kinnison: You are citing it are you not as an achievement under the four and a half per cent contract.

The Witness: Yes, you may call it that.

Mr. Kinnison: You are asking the telephone companies to pay you for the research work which resulted in the development of that as well as in the manufacture of it.

The Witness: I am simply giving that as an instance of an improvement which has resulted in a large saving in the work of the traffic department. That is the saving which I talked about. The saving is in the traffic expenses of the associated companies.

By Mr. Burr:

Q. Now all these things you have been talking about, the investigations that you have been making, the tests that you have been conducting in order to determine whether a given kind of apparatus or a given suggestion is advantageous to associated companies is part of the work which your department does under the license contract is it not?

A. Yes, sir. As I understand it, there is no other charge

[fol. 8135] for this work except that which is paid for under the license contract.

Q. Is it part of the duties of your department to continuously investigate these matters in order that you can make recommendations on the subject to the associated companies.

A. It is. We are continually making studies of conditions under new types of boards or new methods of operating, to see whether they would be of advantage.

Q. Are you familiar with the type of switchboard used in LaCrosse, Wisconsin?

A. I am. I have conducted studies on boards having operating features similar to the board at LaCrosse, Wisconsin, both in boards having all of the features from an operating standpoint which are in use and many boards having different combinations of those features. I have also observed the operation of the board in LaCrosse, although I have not made an extensive study there to determine the operating features that were in use on that board.

Q. Are the associated companies, including the Ohio Bell Telephone Company, receiving the benefit of these changes you say you have made?

A. They are. We have in various correspondence with different associated companies advised them as to the various features that are of value to the company under various conditions, and the associated companies are to a large extent using these facts where they prove to be of assistance in giving service.

Mr. Kinnison: How long does it take to complete a con-
[fol. 8136] nection where the calling and called subscribers are on different exchanges.

The Witness: That runs about 15 seconds. I am referring to the work of the operator in completing such a call.

Mr. Kinnison: In a town where traffic could be handled on one exchange, one exchange would give more satisfactory service to the subscribers then two exchanges in that town.

The Witness: I do not think that anything but perfectly satisfactory service would be given in either of those conditions. The length of time to get the called party would be slightly longer on the two stations.

Mr. Kinnison: There would be a saving in personnel of the employees?

The Witness: Yes, sir, there would be a saving in the number of operators used.

Q. Do you know of any board in the United States which comprises all of the features of the LaCrosse board?

A. The LaCrosse board—Speaking of the features, I am mentioning them from a traffic man's point of view. As far as the actual operation is concerned there are other boards where we could take an operator that has been trained to use them and set her down at the LaCrosse board and she would not know there was any difference. The only thing about the LaCrosse board that is different from any other board I have seen is the method used to get the calls to the operator. Instead of the subscriber's line going directly [fol. 8137] to an answering jack on a switchboard it goes through a set of switches and it appears to the operator on a line signal and she plugs in on a line jack exactly the same as on other boards, so that that feature of the switchboard in the LaCrosse board from an operating view point does not present any differences.

Q. That is what is referred to as the mechanical distribution of calls is it not?

A. Yes, sir.

Q. Do you know of any other board in the United States that has that feature?

A. Yes, we have a board in Wilmington which we installed in 1916 which has complete mechanical distribution of calls, and on that board we made extensive studies with the idea of determining whether the features which can be brought about by the distribution were of sufficient value to pay for the additional equipment.

Mr. Kinnison: If I understand you correctly on all of these mechanical improvements which go to improve the art of telephony, they are sold to the associated companies at a profit are they?

The Witness: Well, I have no definite understanding to the contrary. I assume that the Western Electric Company is running as a business institution and selling its equipment at a sufficient profit to keep in business. That is absolutely my understanding, yes, sir.

Mr. Dotson: Have you concluded your study of the Lacrosse board and board in Delaware that you have mentioned?

[fol. 8138] The Witness: No, I would not say that we had. We have recommended the use of certain of those features and are using them from time to time, continuing to study those boards with this view. If we can accomplish some

of those features by improved equipment which does not cost as much as those boards have, then we will be able to use still more of those features and more of those boards.

Mr. Harshman: What features have you used up to the present time off of that board?

The Witness: We are using the audible ringing signal, the machine ringing on A board; we are using multiple line lamps, using automatic peg counters. We are using practically all of the features on those boards with the exception of what is termed the——

Q. Those are features on the Wilmington, Delaware board which you are recommending to other boards, is that the id-ea?

A. Under conditions where they prove in.

By Mr. Burr:

Q. But only under those conditions?

A. Yes. None of our switchboard developments—Very seldom do we get one where we can say, "This applies on all future boards." We supply the associated companies with circular letters, giving them conditions under which various things will prove valuable to them in their giving of telephone service.

Mr. Harshman: Who developed the LaCrosse board?

The Witness: Why the earliest record we have of the use [fol. 8139] of most of the features that are in use in the LaCrosse board was in installation in Youngstown in this case put in by the American Telephone and Telegraph Company. There is nothing on the LaCrosse board we have not a right to use and have not used since 1910 when the Youngstown board was first equipped with those things.

Mr. Harshman: How long has the LaCrosse board been in existence?

The Witness: The LaCrosse board was cut into service in the middle of 1921—Along about June of 1922 the LaCrosse board was put in service.

Mr. Harshman: Was it then you commenced that systematic study or did that study start in Youngstown.

The Witness: No, we started that study in the Youngstown board in 1910 and the Wilmington board was put into use in 1916.

Mr. Shuler: Isn't it a fact that the LaCrosse board cannot be built by any one person complete.

The Witness: Absolutely not. The Western Electric Company could build that board with all of the features.

Mr. Shuler: You own it or control it?

The Witness: Yes, sir, we can use all of the features of the LaCrosse board. There is nothing novel about the Lacrosse board.

By Mr. Burr:

Q. So as to clear the record, Mr. Allen, the LaCrosse board, so called, is not manufactured by the Western Electric Company?

[fol. 8140] Mr. Harshman: He has said so.

Mr. Burr: He did not.

The Witness: The original LaCrosse board was installed a great many years ago by the Kellogg Manufacturing Company and it has been modified from time to time, and the 1922 change was a change in getting the calls to the LaCrosse board. There was very little change made. These switches were introduced as a distributing scheme in 1922. Previous to that the LaCrosse board for a number of years had practically all of the features that are on it.

Q. But the board at LaCrosse is not a board made by the Western Electric Company?

A. The original board was installed by the Kellogg and they have put on all the changes.

Mr. Shuler: You do not want the inference that the LaCrosse board is a result of the work of the General Staff.

Mr. Burr: He did not say so.

Mr. Shuler: He said absolutely that.

Mr. Dotson: I submit I got it that way.

Mr. Burr: The gentleman in the Dayton case I know are quite sure of that. They have been drumming away on the opposite of that.

Mr. Shuler: You have been asking this witness what the General Staff has done for telephone companies. You called attention to the LaCrosse board, and I put no other inference on it.

[fol. 8141] Mr. Burr: He has been telling you over and over again that the features of the LaCrosse board are something which the General Staff have had under investigation and development for many, many years, commencing with 1910. I am sorry this misunderstanding occurred——

Mr. Dotson: Just a moment——

Mr. Burr: Because we had no intention of intimating that the LaCrosse board was engineered by the General Staff or manufactured by the Western Electric Company.

Mr. Dotson: I think that the record at the present time would lead a disintere-ted person to believe that the board in Youngstown, which seems to be the basis of the board in LaCrosse, was developed by the General Staff.

Mr. Burr: Nobody has said or suggested that the Youngstown board was made the basis for the LaCrosse board.

Mr. Dotson: What connection had the Youngstown board with the LaCrosse board if any?

The Witness: The Youngstown board had many of the operating features that are used on the LaCrosse switchboard.

Mr. Burr: Mr. Dotson, may I explain this to you?

Mr. Dotson: Certainly if you wish.

Mr. Burr: This testimony as you will remember perhaps has been stipulated into the Dayton case.

Mr. Dotson: Well, I don't know.

[fol. 8142] Mr. Burr: I think if you don't know it is because you do not believe me or did not hear my opening statement.

Mr. Dotson: I don't remember them. I will put it that way.

Mr. Burr: In that case the LaCrosse board, so called has been argued as something the Bell system did not have and as something better than anything which the Bell system has, and it is responsive to testimony of that kind that I asked Mr. Allen in passing something about that board. I am sorry I did not explain that for the benefit of Mr. Shuler and the gentleman from Canton, because they had gotten the wrong impression. What I am trying to do here is exactly the opposite of what they accuse me of doing.

Mr. Dotson: Your explanation is of direct value to me.

Mr. Burr: It is a little difficult when we have so many cases going at once to differentiate between the different cases and counsel in the different cases.

Mr. Kinnison: Did I understand you to say in response to Mr. Shuler that the Western Electric could make the LaCrosse board with absolute freedom?

The Witness: Yes, sir.

Mr. Kinnison: Patent rights expired.

The Witness: There are no patent rights involved in it except patents which we have in our files, which Mr. Rhodes presented to us the other day.

[fol. 8143] Mr. Kinnison: You acquired them since the development of it?

The Witness: Oh, there is nothing patented in connection with anything that has happened lately.

Mr. Kinnison: I am speaking of the LaCrosse board as a board. I don't know anything about the patents involved. You are free to manufacture it are you?

The Witness: Yes, sir.

Mr. Kinnison: You did that by acquiring the patents of the automatic electric company of Chicago?

The Witness: No, there is nothing in connection with the LaCrosse board that was made by the Automatic Electric Company in Chicago.

Mr. Kinnison: Do I understand you to mean that there were no patents on it.

The Witness: No patents; no I have just stated there is nothing new in connection with the LaCrosse board. It is simply a combination of features which we have been using in various places since 1910 and in different places before that.

Mr. Kinnison: There is nothing subject to patent protection?

The Witness: There is nothing but what we are free to manufacture. There may be some patents in connection with the board, but there is nothing in the LaCrosse board but what we are free to manufacture and use where it proves *in as* efficient.

By Mr. Burr:

Q. What has been the general effect on the investment [fol. 8144] and operating expenses of the associated companies based upon the changes in switchboard design and switchboard development which you have been describing?

A. Many of these features which we work on from day to day in connection with switchboard development, are not susceptible of definite evaluation. I have gone over a number of the features such as those I have mentioned here, and the ones which I have mentioned, and which I

have given a value to result in a saving of over $16,000,000 a year to the Bell system over the previous boards.

Q. In speaking of the Bell system you are referring to the associated companies?

A. To the associated companies.

Q. How are the associated companies informed of the improvements in switchboards and other equipment and methods also which are developed from time to time by the American Company?

A. The engineers of the various associated companies such as the Ohio Company, are in almost daily, if not daily communication with the engineers of the General Staff by telephone. A continuous volume of correspondence is going on between the Staff engineers and the associated company engineers, and there are very often questions which need to be discussed and talked over to get at the basic facts. In those cases, engineers from the associated companies come to New York and work with the engineers of the General Staff. In many other cases it is more advantageous to get at the problem right in the field, and in those cases our engineers go to the city where the [fol. 8145] question is involved and work with the associated engineers in working out a satisfactory solution to the problem in question. On the large projects of switchboard development and operating methods, after our studies are completed, on any subject, circular letters are issued, which are sent out to all of the associated companies to be used by them as a basis for their field engineering.

Q. I have with me a set of general engineering circular Number 1,200, which is a typical circular, showing the date it is sent out, showing how central office equipment, both local and toll, is engineered. This has sometimes been referred to as a traffic engineer's Bible. It is the basis data for engineering switchboards.

Q. Is that so-called circular subject to revision from time to time?

A. It is. It is under fairly constant revision. The circulars are nearly all of them sent out in loose leaf form, with the idea that there will from time to time be either additions or alterations, and at such times new pages are printed, and at such times as material revisions are brought about, a new circular is issued. I will be glad to

get additional copies of this if anyone should want them. I did not assume that they would be of any practical value after this is over, unless they want to engineer a switchboard.

Mr. Kinnison: They might be before this is over.

Q. I note that the date on the circular is October, 1922. [fol. 8146] What work has been done on it since that time if you know?

A. I do not know of any revisions that have been sent out on this since that time.

Q. Well, I was not thinking so much of revisions as I was of practices covered by the circular. Are they subject——

A. The work is continually going on. The engineers who are responsible for that work are continually employed on studies and render assistance to the associated companies both in putting this circular into effect and interpreting it and solving any specific problem- that are not covered in this circular. This circular by the way gives the general instructions. Now there are a large volume of circulars, as for instance, on a number O type of switchboard, which is just one type of a common battery board, there is a circular about as large as this that gives the details of engineering one of those boards. This circular would lead you to the point where you would find out whether you were going to put in in that particular city, based on basic data as to calls and so forth—Whether you wanted a number nine or a number 1-C board. At that point, you would find a circular such as would apply to one of those boards, such as say a circular applying to a number 9 switchboard.

Mr. Burr: The circular may be marked Allen's Exhibit Number 4 and is offered in evidence.

And thereupon the circular above referred to was marked [fol. 8147] for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted marked Allen's Exhibit Number 4 and made a part hereof.

Q. Have you any idea how many days, weeks, months or years it has taken to develop the practices covered by the circular?

A. Why, it is continuous work on the part of several local engineers and several toll engineers who are working continually on the routines in connection with switchboard engineering.

Q. In whose employ are those engineers, local and toll?

A. They are in the employ of the American Telephone and Telegraph Company.

Q. And a part of the General Staff?

A. They are.

Q. I understood you to say there are other circulars which go out to the associated companies, including the Ohio Bell Company. Have you any idea how many of those there are all told?

A. There are several thousand traffic circulars which are issued by the particular department with whic- I am connected. We have issued since 1908 when we started a new series—There have been about 250 of those issued. Of the general engineering projects, covering more general projects, this circular, 1200 were issued in 1922. I think there is somewhere near fourteen or fifteen hundred of those. In addition to that there are commercial and various other [fol. 8148] circulars. So that the total actual circulars sent out are in the thousands.

Q. You speak of these as circulars. In common parlance a circular is usually considered as a comparatively choice general communication on some subject. Do you know how many pages there are in Circular Number 1,200?

A. It is numbered in sections, so that I do not believe it shows the straight numbering through. I do think I remember there are approximately 150 pages.

Mr. Shuler: It wil- show for itself.

Q. And this so-called circular goes into the subject in the greatest detail does it not?

A. Both local and toll traffic engineering is covered in detail; the use of the basic data and the outline of certain of the best forms to use are outlined in that circular.

Q. Are new circuits or types of equipment now being worked on and tested out by the engineers of the General Staff, so that they will be available to the Ohio Company?

A. There are both in the laboratory tests and in actual field trial a number of modifications in switchboards and in circuits, which will be, if successful, and we are at the

point where we think a number of them will be successful, available and of use to the Ohio Company.

Q. Has there been any diminution in the work required of your department in the last few years?

A. There has not. We are having constantly more and more studies and development along that line.

Q. In your judgment then the necessities of the busi-
[fol. 8149] ness requires that?

A. I think that the work is absolutely necessary and we are satisfied that the most efficient way to do it is by a general organization working on that, and it is absolutely essential.

Q. In what other ways in addition to switchboard and development design does the General Staff assist the associated companies?

A. We have expert operating men who are making a continual study of the best methods of operating boards and the study and development of the actual practices which will be used in operating the board after they have been designed. As I said before, the fact that we are spending about $140,000,000.00 a year makes it obvious that there are real economies in studying operating methods and practices, to look for any shorter ways of accomplishing the operations which have to be done.

Mr. Shuler: Who is spending $140,000,000.00 a year?

The Witness: The associated companies of the American Telephone and Telegraph Company for operators' wages.

Mr. Kinnison: Spending what?

The Witness: I said the fact that we have a payroll for operators in the associated companies of practically $140,-000,000.00 a year makes the study of the best methods of handling calls on switchboards a very important work, and this work is constantly being studies. This work involves a considerable amount of field work, as our engineers at certain times in the development of a method, make an ac-
[fol. 8150] tual field trial oftentimes covering months of time, in order to make sure that the new method will give satisfactory service to the public, and sometimes improve the service and in other cases keep the service at the same grade and enable us to make economies in the operation. This work is carried on by engineers in both the local and toll field.

Mr. Dotson: These methods that you have just spoken about being tried out in the field and you keep a man from the General Staff up in the field for the purpose of determining whether or not it will give satisfactory service to the public—Is that experimental study during the experimental stage that that goes on.

The Witness: Yes, we have many of these ideas developed by our own people or by operating men in the associated companies or by people in any line of work that submits an idea. We study that to see whether it has possibilities in it. If it does we make more or less experiments in New York, and if it continues to show prospects, then we will actually install that equipment or put that method in effect in some typical office and keep it in effect there and study the results over long enough a period to find out whether there are real advantages in the proposed change.

Q. Then you do not really make a practical test in the home office or where the General Staff carries on its operations?

A. The American Company operates no local exchanges and our Staff operates no exchanges. We would make a [fol. 8151] toll study either — an associated company's office or in one of our Long Lines department's offices, depending on the type of study. We have no office which we operate ourselves. We use——

Mr. Dotson: Then as a matter of fact, such experiments, if carried on on an extensive scale, will affect the cost of operating your local exchanges will it not?

The Witness: We send our own people out to carry on these studies, and in any case we are making a study of that kind, if there are any expenses to which the local company is put in connection with the study, we reimburse them for that amount, and if we put in any equipment which does not prove to be satisfactory equipment, we either remove it and restore the equipment which was previously there or settle with the associated company by paying for the new equipment which is put in or any part of it so that the associated companies are put to no expense through this work.

Mr. Dotson: What means have you of ascertaining whether the public receives the use of such equipment that you are experimenting on in a favorable way.

The Witness: We have various means of determining that, both by observing on the calls as they are going through

any comments on the part of the public and by interviewing the representative body of subscribers and getting their comments on the new feature, if it is one that is noticeable to them. In many cases our engineers have carried on [fol. 8152] studies where we felt that the best test as to whether the subscribers were approving of the new feature was to actually talk with a considerable number of representative subscribers and get their direct reaction to the change.

Mr. Dotson: Is that the only method which the General Staff has of determining the practicability of equipment tested out in this fashion.

The Witness: I have outlined it. We make laboratory tests and do all of the preliminary work——

Mr. Dotson: I understand that that is not the——

The Witness: I don't know of any other method of finding out how the public like any change in equipment other than to put it in and use it.

Mr. Burr: The field being as broad as it is I think Mr. Dotson ought to specify some particular practice to which his question refers.

Mr. Dotson: I am referring to the practice which he has been describing.

Mr. Burr: I know, but he has been describing very, very many practices.

Mr. Dotson: Not in this particular.

Mr. Burr: Oh, yes, they extent from the action of operators at a board down to the matter of the issuance and execution of circulars.

The Witness: A great many of the experiments which you carry on would not be in any way known to the subscriber. [fol. 8153] For instance, whether we have a steel cord or a tinsel cord, whether we have a plunger type key or lever type key has no direct effect on the subscriber. There are certain types of operation where the subscriber is supposed to depend on it, such as ringing tone and in those the only way I know of to find out is to develop them to the point where the circuit is operating properly and then install them and get the subscribers' reaction as to whether they are satisfactory from their point of view.

Q. Do you know whether the subscribers do depend on that ringing tone now?

A. Yes, we know that the subscribers become familiar with that tone. For instance the original study on that par-

ticular feature was made in Youngstown and we later on continued that to the point where we felt that it had value in multi-office cities. I personally conducted a study in Minneapolis and St. Paul in 1916, and after making studies in the office I interviewed about 400 subscribers in each one of those cities in order to find out the percentage of the subscribers who do become familiar with that tone and whether it was as satisfactory to the subscriber as the previous practice of giving reports on the part of the operator, stating that the called party was being rung, and that I think it fairly typical of the method of carrying out those experiments.

Q. Were those experiments conducted by you while you were a General Staff man?

A. They were.

[fol. 8154] Q. The benefits of that were given to the associated companies?

A. A circular was issued in 1917 outlining an extension of the syste-, to multi-office cities and has since that time been very largely installed——

Q. Including the State of Ohio?

A. Yes, sir.

Q. Have you any circulars on suggestions——

A. I would like to introduce as Exhibits, local operating practice, which is the set of circulars issued as a result of the studies of the local traffic engineering people on local operating practice, and also a copy of the toll operating practice, which has been done by the toll traffic engineers.

Mr. Burr: They may be marked respectively Allen's Exhibit Number 5 and Allen's Exhibit Number 6 and we offer them in evidence.

And thereupon the paper writings above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and are herewith submitted, marked respectively Allen's Exhibit Number 5 and Allen's Exhibit Number 6 and made a part hereof.

Q. Mr. Allen, are there other lines of work undertaken by the General Staff in its traffic engineering department which are also of assistance to the associated companies in operating telephone exchanges?

A. There are a number of other important lines of work which are carried on by the General Staff engineers. One

[fol. 8155] of these lines of work is the study to determine for all of the varying types of switchboards and the varying classes of calls handled in different cities throughout the country the exact number of calls which can be handled per hour by the average operator and maintain a good grade of service. As an example of the importance of this work, if we could arrange so that each telephone operator in the associated companies would handle just one additional call per hour, or eight calls per working day, we would accomplish a saving in the wage account of the Bell system, one million dollars per year, so that it will be seen from that the absolute importance of knowing what the proper operator loads should be. We want these loads high enough to be efficient. We do not want them high enough so that we are burdening our operators or that we are in any way interferring with the possibility of getting a high grade of service. This work has been studied in many cities throughout the country, these studies taking a considerable amount of very technical and carefully thought out methods and taking the time of very well trained experts on such studies. As a result of these studies we have issued to the various associated companies circulars giving them definite instructions as to the possibilities on all the various types of switchboards and on the various classes of calls, such as flat rate calls, message rate registered calls and so forth.

Another line of work which is closely related to the prob-
[fol. 8156] lem of operators loads is the maintaining of necessary records of the work that is done in a telephone office. The records of the amount of traffic are absolutely essential for all engineering work. They are the basis for determining the requirements, not only in regard to the amounts of switchboards, but the size of the buildings which it will be necessary to build. These records assume greatly increased value when they are kept in a uniform method throughout the various associated companies. With these uniform records, it is possible to compare the accomplishments in similar offices so that we can judge just how efficient a job is being done in one office compared with another fairly similar office. This work is under continuous study. Improvements are developed in the ways of maintaining these records and from time to time revisions of pages of the instructions are sent out and periodically complete new instructions are sent out. Early in 1923, we issued to the various associated companies a complete new set of instruc-

tions on these central office records and during the year 1923 representatives of our department has visited every one of the associated companies and assisted the local engineers in putting these new instructions into effect so that they would at once get the benefit of these revised and improved instructions. I would like to introduce a copy of these instructions as an exhibit. These are the local and toll peg count instructions and gi-e the best methods and supply a large number of forms for use by the associated companies [fol. 8157] in maintaining records of the actual business handled in those offices.

Q. Are they traffic circulars numbers 174 and 178?

A. No, they are traffic circulars Numbers 174, 175, 176, 177 and 178, making a complete set of circulars divided according to the uses. That is we have the local peg count instructions, for instance in 174, and a separate set of toll peg counts instructions in traffic circular 175, for the reason that we have many offices where the local and toll are both large enough so that they are administered by a separate force, and it saves in the supply of circulars if we have them separated, so that the toll business or office, only being interested in toll, can use that, and the local offices are furnished only with the local instructions.

Q. Are those five circulares included in one binder?

A. Yes, sir, they are included in one binder and they will make one exhibit.

Mr. Burr: We offer traffic circulars Numbers 174 to 178 inclusive, included in one binder, under the *Number* Allen Exhibit Number 7, the exhibit including the five circulars as offered in evidence.

Mr. Harshman: Do these circulars show the results of studies or do they merely show the method of making studies.

The Witness: These circulars are the method of keeping these records and are themselves the result of studies of the [fol. 8158] best way and studies of the best forms for doing this work. But these are not studies. These are more nearly instructions as to the best methods of keeping these various records. They show sample figures — many of the forms; that are of great convenience in the field in understanding the instructions if they can turn to some figures.

A. Am I correct in saying that a peg count primarily is a record of the number of calls, exchange or toll, handled,

and that it is used for determining the amount of switchboard and other apparatus required, as well as the number of operators necessary for each hour of the day and the efficiency with which the traffic is handled?

A. That is a correct statement of the basis need for these records.

Q. Why are they so very useful in the telephone business?

A. The handling of calls in the business of the telephone company, and this record which we get, which has been termed a peg count record, is the only means we have of determining the actual work which is done. That is, the call after it has been handled in the majority of cases, there is nothing physical that you can take hold of and count. That is the record must be made definitely at the time the work is done in order to have any record of the volume of business handled. And the reason for that of course is the future use in providing equipment and providing force and in determining the actual efficiency with which the various offices have been handling them.

[fol. 8159] Q. You do not keep the count by means of an actual board and *begs* as you used to; in other words, the term "peg in count" is really an anachro*n*ism is it not, in view of the modern way of keeping count of the traffic?

A. There has been a variety of methods followed in this, from the time when they had a box of peas or beans on the one side and a box or a bottle on the other, and when they made a call they moved a pea or a bean over. And they they had what is practically a cribbage board, where the operator moved the peg. That was the basis of the name.

We have recently developed it at various offices so that at those offices we have electrically operated counters, where the operator presses a small button on the key shelf and the call is electrically registered. And in various types of boards we actually have an automatic record of count of calls made without any action on the part of the operator. But the term "peg count" had been understood by the telephone people and there seemed to be no reason for changing the name.

Q. Do the engineers of the General Staff undertake to help the associated companies in matters concerning the handling and management of the operating forces?

A. They do. The telephone problem is in many ways different from any of the problems confronting the other concerns, even other utilities, in that we have to decide some

time ahead and hire and send people to handle traffic which we expect to get at some future —. The training period for [fol. 8160] operators varies from a few days or matters of that kind in the smaller cities to approximately five weeks in our large cities, so that we have to hire operators and train them a sufficient length of time to have them ready when we get the traffic. The problem is complicated by the fact that we have no control over the business which we are going to do at a certain time. If we were manufacturing brooms we could decide we were going to manufacture a certain number of brooms in one month. But we cannot decide how many telephone calls we will handle. We have to handle the telephone calls that are given to us so that these conditions make the problem or proposition of telephone management a very complicated one.

I would like at this time to introduce two exhibits. One is a typical curve of a telephone that is handling a large percentage of residence stations. The other is a typical curve of a telephone office handling a very large per cent of business stations, that is, stations or telephones located in the business section of the city.

Q. Is one of them marked traffic circular 117?

A. No, one of them is marked typical residence office and the other is marked typical business office.

Mr. Burr: They may be marked respectively Allen's Exhibits Numbers 8 and 9 and are offered in evidence.

And thereupon the circulars above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Tele- [fol. 8161] phone Company, and are herewith submitted, marked respectively Allen's Exhibits Numbers 8 and 9 and made a part hereof.

The Witness: On these curves you will see the problem that confronts the telephone management. We have in practically every office a distinct curve for that office. We have service 24 hours in the day, and in practically no two hours of the day do we receive a similar amount of business. On the curve marked "typical residence office" you will see that the peak of the traffic for the day in this office handling traffic largely from residences happened between nine and ten in the morning, that there was a gradual falling off in traffic then to a low point between four and five, a slight peak in traffic just before six o'clock when offices were clos-

ing, and then the social conversation representing a considerable peak between seven and eight o'clock. Then with a very sharp falling off in the service until night.

On the typical business office on the other hand you will see a rather different condition. We have there a peak hour of the day one hour later, between ten and eleven, with a fairly sharp falling off around the noon hour, with the low point reached between one and two, then with an afternoon peak and a very sharp falling off in traffic around shortly after six o'clock. Now we are confronted with the proposition that we have to supply a sufficient force to handle these calls each hour of the day, and if we [fol. 8162] are going to be efficient and not spend money that can be avoided, we want to fit our force so that we will have sufficient people there to handle the traffic each hour and not have a surplus during the hours when lower traffic is on.

So that we have studied this problem. The first instructions covering routines to accomplish these results were issued by the General Staff in the year 1903. That has been a continuous study since that time, and revised instructions have been issued from time to time as the methods were improved. I have a circular here tha- gives the instructions that were issued in September, 1921, and which have been revised since then from time to time. Certain pages in those instructions I think show the dates when revisions have been made, so that this gives the instructions which have been prepared as the result of studies in the General Staff which have been applied to the associated companies as a basis for this work of office management. That is traffic circular Number 117.

Mr. Shuler: You do not have any trouble with your business. You have a very good load there for about eight hours, which is about a girl's trick isn't it? What is difficult about the day's load there? The load is about an eight hour load?

The Witnes-: You would not suggest that you would provide the same people in an hour when you had as that curve shows about fourteen thousand calls as you would in hours [fol. 8163] in the afternoon when you have about 11,400, when one girl can handle say approximately 150 calls? There is a matter of probably 20 girls that ought to be on less even in that afternoon period. Just to show you how

elusive some of these things are, that is the hardest of all the curves that we have to do an efficient job on.

Mr. Shuler: It seems to me that the eight hour load would probably be your peak.

The Witness: You are probably the man we are looking for. You are wasting your time as a lawyer.

Mr. Shuler: Mr. Vail was a lawyer wasn't he? Mr. Young of the General Electric was a lawyer wasn't he?

The Witness: I have great respect for the lawyers.

Mr. Kinnison: I am glad to hear that.

Mr. Harshman: Have you a schedule of the operators that were necessary to operate these two typical offices that you have based these curves on.

The Witness: We have made out such schedules.

Mr. Harshman: Will you furnish us those schedules?

The Witnes-: They can be made out, yes, with no particular complications, although I say I haven't any such data with me.

By Mr. Harshman:

Q. Could you furnish it and have it with you when it comes to cross-examination?

A. Yes, I would be very glad to do that.

[fol. 8164] Mr. Burr: The traffic circular Number 117 is marked Allen's Exhibit Number 10 and offered in evidence.

And thereupon the circular, above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted marked Allen's Exhibit Number 10 and made a part hereof.

By Mr. Burr:

Q. Mr. Allen, I am inclined to think that you and Mr. Shuler were perhaps talking at cross purposes, and that you did not understand the question or perhaps he did not understand the exact significance of the exhibits 8 and 9. Calling your attention to Exhibit Number 9, if I understand the purpose of the exhibit, it is to show how the load fluctuates. That is right, isn't it?

A. Yes, sir.

Q. It is with the knowledge od the fluctuation of the load that you are able to determine the number of operators

more or less which must be used at the board during the time so covered by the chart; that is correct?

A. That is correct. The object being to have sufficient operators there. One of the complications on that curve is the fact that the traffic during the noon hour — only to about 9500 calls, and you have a very difficult proposition in getting enough time to give all of the operating force a lunch hour, due to the fact that there is a considerable amount of telephone calls put in by people who are supposed to be taking their lunch, so that that is one very [fol. 8165] complicated thing to meet that situation.

Mr. Shuler: Seriously, wouldn't any up-to-date manager find that out in a few days without you folks charting it, that he did not have enough people on his board during those hours.

The Witness: No, it is a very difficult proposition to determine the exact force that will fit the traffic and not have too few or too many at any given time.

By Mr. Burr:

Q. The operating companies chart the load do they not?

A. They do to some extent. More of it is kept on forms which are given in 117, which shows the actual amount of traffic each hour throughout the day. With certain breaking down into half hour periods during parts of the day when traffic is increasing or falling rather rapidly.

Q. I think that Mr. Shuler had reference to the face that Exhibit Number 9 shows between say the hours of ten in the morning and five in the evening what he terms a peak load. Let me ask you whether or not as the result of these studies the force at the board is reduced from time to time and increased from time to time between ten in the morning and five in the evening?

A. It is. And in many offices before this work had developed to the point where it has now arrived, it was found that many of the people were providing practically a flat force in offices of that kind throughout the day, and by the instructions and data showing them how to reduce the force in certain hours of low traffic, a very considerable economy [fol. 8166] has been made.

Q. Why is the making of these charts or rather the supplying of the information shown on the charts one of the most difficult things which you have to do in the way of

charting different matters connected with your work? I think you said that a moment ago?

A. Yes. It is a proposition of suiting not only the force to the traffic curve so that we will have sufficient people at all hours to handle the traffic and being able to reduce that force in lower hours and at the same time allow our operating people, who are the operators at the switchboard, reasonable hours for their lunch periods, reasonable hours for relief periods, which we plan to give during approximately the middle of their half day's work, so that the proposition of accomplishing all of those results, having sufficient people there and no waste and at the same time assigning reasonable hours of work to the operating force, is the reason why that work is of a complicated nature and why the chances for considerable economies or considerable periods when the force is not on in sufficient numbers, which might result in poor service; and those things are not matters which even to an expert traffic man can be done as a matter of casual inspection. It is a result that can only be accomplished by careful mathematical calculations, combined with judgment, gained through a considerable amount of apprenticeship in work of that kind.

Q. Have you another traffic circular Number 200 relating [fol. 8167] to toll office management?

A. I have. This circular is typical of the circulars we issue to the associated companies, showing the men who are responsible for operating the various telephone offices, the latest and most up-to-date method of office management. It is traffic circular Number 200.

Mr. Burr: It may be marked Allen Exhibit Number 11 and we offer it in evidence.

And thereupon the traffic circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Allen Exhibit Number 11 and made a part hereof.

Q. It is by these means in part that the General Staff undertakes to assist the associated companies in matters concerning the handling and management of operating forces?

A. Yes, sir, these are typical on that. The circulars are typical of the information supplied them and the items of

work which I have outlined I think are typical of the large variety of work which we carry on for the benefit of the associated companies.

Q. Do they cover all of the ways in which the General Staff undertakes to help?

A. No, I think this is really a very small part. I have put in seven or eight out of a matter of 250. Many of the other things have only touched very small part of the actual work we are doing.

[fol. 8168] Q. In addition to circularizing the associated companies, does your department maintain a personal contact between your members and the members or employees of the associated companies, for example the Ohio Bell Company?

A. We do. Representatives of the department very frequently go to the cities of the associated companies to assist them either in starting various new instructions, getting them interpreted properly or in helping in specific jobs applying to traffic work.

Q. Can you recall any specific instances of your own visits or the visits of men of your department to Ohio in recent years in connection with the services rendered to the Ohio Company?

A. Yes, I have in mind some instances of that kind. Mr. Remmon, one of the men working on toll office management represented by this last exhibit, is in Cleveland this week, helping the company on various matters of that nature. Mr. Meeker, who is the man who heads up the division working on the peg count records, spent some time in Cleveland during the past year assisting them in getting those routines going. Mr. Crowe——

Q. You say some time—You mean a day or what?

A. He was there during the past year two different periods of a week in each case. Mr. Crowe, who heads up the section on the force adjustment, has spent two periods of a week in each case during the past year with the Ohio Company. I have personally been from time to time on an average I should say of a couple of times a year in Ohio [fol. 8169] Company offices, assisting them on various problems of this nature.

Mr. Dotson: That service would only be beneficial to Cleveland.

Mr. Burr: Why.

Mr. Dotson: That is what I am trying to get at.

The Witness: Why we work in a great many of those cases with the general traffic men of the Ohio Company who are responsible for carrying on that work throughout the Ohio Bell Company's offices in the state. In fact Mr. Meeker carried on one of the weeks that he was out here on peg count—the work was carried on in Akron, that being a good city to experiment with that work and get it started.

Mr. Dotson: Mr. Meeker's work then was not with the operative department of the Cleveland exchange; it was with the state officers of the Bell.

The Witness: In that particular case he was working with Mr. Michaels who is the general supervisor of traffic of the Ohio Bell Company and is responsible for that work in the Ohio Company.

Q. You speak of these men having *done* to Cleveland. Where are the general offices of the company?

A. They are in Cleveland.

Q. Where is the general traffic manager?

A. His offices are in Cleveland, 4300 Euclid Avenue, Cleveland.

Q. That was the reason why primarily these men went [fol. 8170] to Cleveland was it not?

A. Yes, sir. Yes, although Mr. Coffee was here about two months ago and worked in Columbus, Canton and two or three of the other cities throughout the state on work where it was felt that it could be accomplished with better results by being in those cities.

Mr. Dotson: Is that all of the service you know of having been rendered in behalf of the Ohio Bell Company in this respect?

The Witness: No, I was simply giving those as typical instances, of men in their own particular department who have been here.

Q. During the past year?

A. Yes, sir.

Q. That then does not necessarily cover all of the cases?

A. No, there are many other cases of men in the traffic department on the General Staff working in the Ohio Company territory, giving them assistance or help in traffic problems.

Q. How frequently if at all did you men connected with the traffic department of the Ohio Bell Company go to New York and discuss there these problems with you and your people?

Mr. Dotson: If you know?

The Witness: If you would like to have me read in the record I can read a considerable list of those.

Q. All right.

A. I might read a few just to show it. I have here eleven pages, just giving short instances of men who have been [fol. 8171] in various—particular men who have been on trips to Ohio, and I have a list of several pages of cases of men from Ohio being here.

Q. That is being in New York?

A. Yes, sir. Mr. Rayner was in Cleveland and worked with Messrs. Green and Anthony and Marcoes. That was 11/3/23. Mr. Remmon was in Youngstown in November, 1923. He was in Dayton and Columbus. Mr. Coffee was in Dayton, Columbus and Cleveland in November, 1923, Mr. Barbour was in Cleveland in December 1923. Mr. Froeliger and Mr. Darrow were in Cleveland in May and June 1923. I have a list of several pages of those.

Q. I think that will satisfy the curiosity of the gentlemen from Toledo.

Mr. Dotson: That depends on what portion of those pages is taken up by comments other than the mere mention of the visit.

Mr. Burr: That is all for this witness, for the present.

Cross-examination.

By Mr. Dotson:

Q. You were speaking in your testimony awhile ago about a saving of sixteen million dollars. That statement was made in connection with your switchboard testimony. In what was *was* this saving accomplished?

A. That was accomplished by the introduction of im- [fol. 8172] provements in the switchboard which reduced the amount of time which it took the operators to handle the traffic, thereby increasing the number of calls handled and reducing the number of operators that were required in the system to handle the traffic.

Q. Now, how was that information or result tabulated? From actual records of time that were secured in the daily routine business of the various associate companies over a given period of time, or was that just an estimate made by the General Staff based upon certain information that it believed it had with reference to the average time it would take a certain number of operators to handle a certain number of calls?

A. Now that is made by applying to the number of calls that are handled of various types the actual savings as shown as a result of the studies which we had made and which are under practically a continuous check by our people to see that the results as outlined during the studies are secured throughout the field.

By Mr. Shuler:

Q. Then by that, Mr. Allen, you only mean this, that the associated Bell Companies during that year received in revenue sixteen million dollars more money.

A. No, it means that the associated companies in that year spent sixteen million dollars less in expenses that they would have spent had not these improvements been made.

Mr. Kinnison: The rate is constant.

Q. But they had that much more income, they had sixteen [fol. 8173] million dollars more income that year for development purposes than they would have had if they had not introduced that development, isn't that true?

A. Yes, sir.

Q. Certainly?

A. That is what I am claiming.

Q. So that you say they saved sixteen million dollars?

A. Yes, our work made it possible to have that much more.

Q. That money being owned by A. T. & T. all went right back to A. T. & T. again?

A. I don't know that.

Q. Those companies being owned by A. T. & T., that money all went right back to A. T. and T. again?

A. I do not know that that follows.

Mr. Burr: That is not a necessary inference.

Q. In other words, the subscriber received nothing for that. His rates were fixed and were just the same?

A. Possibly I may have led you wrong on that. I think I should have probably stated this, that this saving was to the public of the country rather than to the companies.

Mr. Burr: Why?

Mr. Shuler: You reduced the rates?

The Witness: Anything that we do that makes it possible for us to operate more efficiently is ultimately a saving to the telephone subscriber.

By Mr. Shuler:

Q. Can you show me one place in the United States where [fol. 8174] an associated Bell Company ever reduced its rates because of a reduction in expenses by the General Staff?

A. I think the——

Q. No, answer my question?

A. Oh yes the rates from the start of the business will show a great reduction.

Q. I did not ask you that. Answer my question. When was this sixteen million dollars made, this -aving, what year?

A. This figure I am quoting is for the twelve months ending November, 1923.

Q. Ending November, 1923? Now where any place is a result of that saving have rates been reduced? In fact you know that in every place in Ohio they are asking for increased rates? Do you know that they are in Ohio asking for increased rates?

Mr. Burr: They are not.

The Witness: I don't know that.

Q. Let's say in 75 per cent of the telephone districts of Ohio they are asking for increased rates. Do you know any place in the United States where rates have been reduced?

A. Economies from any operation would necessarily result in a saving to the public. It might be a case that would keep the companies from——

Q. Please answer my question.

Mr. Burr: Let him answer.

The Witness: In fact from increasing rates such as would be otherwise necessary if these economies had not been made.

Q. Do you know anything about rate structure?

A. No.

[fol. 8175] Q. You are a traffic man?

A. Yes, sir.

Q. Do you know anything about the cost of operating the General Staff in New York?

A. I do not.

Q. Do you know anything about the expenditures?

A. No, sir.

Q. Do you know anything about the charges made for these services, who are charged with it? Is Western Electric charged anything if you know?

A. I don't know.

Q. You don't know who is charged with it do you?

A. No, I know that the associated companies——

Q. You answered my question?

A. Have the license contract on which they pay a certain amount.

Q. That is all you do know about that?

A. Yes, sir.

Q. Awhile ago in answer to Mr. Burr's question you said there was no charge made back to the telephone companies for these services. As a matter of fact you don't know anything about that?

A. I made the statement that there was no charge made other than the license contract, and I know that is true.

Q. How do you know it?

A. It is my business to know those things.

Q. Are you in the accounting department?

A. No, sir.

Q. Why don't you know whether the Western Electric is charged?

A. I am in the telephone business, a member of the General Staff, and that is a matter that from time to time comes up.

[fol. 8176] Q. Do you know whether the Western Electric is charged anything?

A. I do not know.

Q. Your services are of value to them in building switch-

boards; your services are valuable to the Western Electric in the construction of switchboards?

A. I haven't any knowledge in connection with that feature, no.

Q. They make all of the switchboards?

A. They make all of the switchboards that we install, yes.

Q. Therefore if you make any improvement, it is of value to the Western Electric Company isn't it in cheapening the construction?

A. I think it is of value to the associated companies in getting boards at a lower price.

Q. But it is not in your opinion any value to the Western Electric?

A. I do not see any connection there.

Q. Answer the question. Now you spend considerable money in making these charts and investigations and all these things do you not?

A. Yes, sir.

Q. Considerable money?

A. Yes, sir.

Q. Now, is there anything known to you in your field as switchboard cost per station does that have any meaning to you? What I mean is this, what is the cost per station of switchboard service?

A. In what particular.

Q. Let me put it this way. Every telephone has a per station cost of operation has it not? Its expense of operation is so much per station?

A. To arrive at the expense per station—you could figure that.

Q. You could figure that couldn't you?

A. Yes, sir.

[fol. 8177] Q. This expense was made up of various items —They are made up of many items, labor material and all of that; h-s it ever been figured out what the switchboard cost per station of an economically managed and well-equipped exchange should be? Do you know?

A. No, I haven't any figure of that kind.

Q. You have never studied that out?

A. It is a matter that would be affected by conditions surrounding the office, calling rates and various things of that kind.

Q. How would the calling rates have anything to do with that?

A. The calling rates have a very direct effect. If in a given city you have six called per station per day and in another city you have eight calls per station per day, your expenses for operators to answer those calls will be in direct proportion to the calling rate.

Q. Have you worked out anything on that line, basing it on the calling rates, what the switchboard costs per station should be?

A. We have advanced quite a long ways. We used to consider that figure years ago, but we have found that that was not a very valuable figure in office management, and as I outlined in my testimony, we have worked up a very definite routine, so that we can reduce the traffic in an office to a unit basis and give each a cost per thousand units, which takes into account the amount of traffic that is handled and the complications such as whether calls are trunked or local.

Q. What is the cost in an efficiently managed well-equipped [fol. 8178] exchange?

A. That would very quite directly according to the wages it was necessary to pay the operators in a city. We have very few cities where the operators' wages would be the same. Those wages might vary all the way from twelve to twenty-five dollars a week.

Q. Then your services are not worth a penny to the various associated companies so as to tell one company whether their plant is efficiently and economically managed and it is about right on that or it is too low, or tell them what they are doing in some other plant of approximately the same size and condition? You do not give them any service like that at all?

A. Yes, we render service of that kind, but we do not render it until we know the conditions existing in the particular city we are talking about in regard to these various propositions, such as wage rates and things of that kind. That is a very important part of our business, rendering assistance to them on that subject.

Q. That is what I have been trying to get you to state and you won't state it. Can you state that proposition in your own language?

Mr. Burr: Will you state it again? We have gotten a long ways off.

Mr. Shuler: He seems to know what I want. He says he is doing the work I have asked him the question about.

Mr. Burr: If you will excuse my ignorance I would like to know what it is.

[fol. 8179] Mr. Shuler: I am trying to find out, Mr. Burr, this. Isn't there some unit cost of switchboard operation and equipment based on station calls—I don't care how you base it.

Mr. Burr: That is why I want you to ask it. You are mixing up things that won't mix. You are asking for a unit cost covering switchboard operation and cost. Now the two are absolutely separate and I don't believe any witness can answer the question.

Mr. Kinnison: The witness has not said so.

Mr. Shuler: He said he could. He said he had been making those very studies. I said, "Tell me what they are."

Mr. Burr: Let- see what he answers.

The Witness: If you get to the point of how many units an operator has ordinarily to carry, there we have a very definite idea, and we expect that the average over-all load of operators would be around 230 units per employee hour per day. Now you cannot get out any cost basis without taking in the element of what the wages are in the given town.

Q. I am perfectly willing to take your statement. Now what is that in Cleveland, Ohio.

A. Oh, I don't carry in my head the unit costs.

Q. You have the data on it have you at your office?

A. Absolutely.

Q. And in Akron and in Toledo and in Canton?

A. Yes.

[fol, 8180] Q. Have you sent each one of them copies of that data to tell them why they are low and what they should do to bring it up to the efficiency of the other?

A. We from time to time, some of us working in the field, would take up matters of that kind if there were any cases that looked to be doubtful.

Q. Don't you think that is an important thing?

A. Yes, but that is primarily the function of the traffic officials of the Ohio Company, to run their offices efficiently.

Q. You are not bothered then with whether they run them efficiently or not?

Mr. Burr: Oh, he did not say that.

Mr. Shuler: Yes, he did. Read that, Mr. Stenographer.

(Answer read.)

Q. But you don't check on them to see that they do.

A. Yes, we do a certain amount of checking to see that they do, render any assistance we possibly can to help them do it more efficiently.

Q. Take this business chart here, typical business chart. Now on the peak load, how many operators could there be in that office there?

A. That curve is stated in calls and would have to be reduced to a unit basis. Now one could tell you from that chart how many. That is merely a basis from which the routines carrying through—you would have to have considerable additional amount of knowledge.

[fol. 8181] Q. If you said a while ago in your direct examination that the purpose of this chart was to show the superintendent or whom ever is in charge of the operators the number of operators he should have to take care of the business—Am I right?

A. No, you are not.

Q. What did you say on that?

A. That curve merely shows the hourly variation in traffic, and I introduced it to help illustrate one of the elements of force adjustment.

Q. Didn't I say to you that any good manager ought to know without having this chart made for him how many operators he should have in his office to take care of the calls?

A. Yes, I think you said something very similar to that.

Q. You said, "No, he couldn't", didn't you? And then didn't you follow up and say that the purpose of this chart was to show him the number of operators he should have to efficiently and sufficiently carry on the calls?

A. No.

Q. You did not?

A. No, I said part of that. I did not say the last part.

Mr. Shuler: That is all I care to ask.

By Mr. Kinnison:

Q. Mr. Allen, say a typical city having about 16,000 stations, how many exchanges should they have in your opinion?

A. You would have to study the conditions in that city.

[fol. 8182] Q. Can you take it as a typical city?

A. No, I don't think there would be any typical city with that amount of data.

By Mr. Shuler:

Q. Let me ask you a question there. What is the value of that chart?

A. That chart is merely as I say an exhibit that shows one of the complications in this technique of adjusting operating forces.

Mr. Harshman: Mr. Allen, you said by adding a call an hour you could probably save in the neighborhood of a million dollars a year to the associated companies?

The Witness: Yes. If we should have each operator handle one additional call per hour as far as the actual operating -ages are concerned we could save a million dollars every year.

By Mr. Harshman:

Q. Now have you any circulars or reports showing the results of your studies on the basis of the instructions you have issued that are now in force in the various associated companies on the effect of loading?

A. We have these circulars similar to the ones I have entered here.

Q. You haven't any reports or studies that show the results of your instructions on loading such as are now in effect?

A. No, that is not put up in circulars.

Q. Do you have any data or any reports in your office showing that?

A. No, I think that is in the line of a definite report.

Q. Well, if you have no report in your office on that subject how are you able to make the statement to this commis- [fol. 8183] sion that by making this one additional call per hour per operator you could have a saving of one million dollars?

A. That is merely the result of a very plain mathematical calculation. We know how many calls we handle now and how much it costs us.

Q. But when you have no reports to show the results of these instructions, taking into consideration what you described a while ago as the effect of one thing or another, how do you know that these instructions you have in force are producing the results you intend them to be to enable you to make such an estimate?

A. I don't believe I understood your previous question. Yes, we have reports in our office for every office in the country, showing the number of calls that are handled per day in the telephone offices. We have such reports. I thought you were asking about reports for the whole country. You tied it up to studies which we have made. We have reports based on the instructions in these circulars, showing the actual number of calls and the loads handled in every office throughout the country.

Mr. Kinnison: In actual operation a saving of one second per call on the part of the operator actually reduced the operating personnel?

The Witness: Absolutely. There is no doubt about it.

By Mr. Kinnison:

Q. That is on the basis that they did operate at maximum efficiency?

A. If we reduce work on any one call, we proportionately [fol. 8184] increase the number of calls which we would ask the operators to handle per hour.

Q. Do you mean to say literally if they had eleven operators and you reduced the call one second, the usual operation being eleven seconds, that you would take off an operator?

A. I would have to analyze the thing to find out whether that actually worked out, but that is in general a correct statement.

Q. It would not operate to a reduction of one eleventh of the expense of making the calls?

A. No. It might mean in certain hours you would reduce by one operator during that hour. Some other hour you might reduce by two operators. You cannot take off a fraction of an operator. But the thing generally speaking works out that as you reduce the time taken you reduce the number of people.

Q. Did I understand you to say by reason of trunking from one exchange to another, you increased your operating call by four seconds, one fifteen and the other eleven?

A. It is more nearly ten with the equipment we have now, than fifteen.

By Mr. Harshman:

Q. Referring again to the reports on loading, will you furnish those reports for the cities affected in this hearing?

A. You could get those reports much better if you got them from the officials of the local company.

Q. We would like to have them from the General Staff as well. Also when it comes to cross-examination we would [fol. 8185] like to have you be prepared to furnish us the full and complete information with reference to the La-Crosse and the Wilmington boards about which you have testified in your examination in chief today. We expect to go into that.

(No reply.)

By Mr. Burr:

Q. So the photograph showing the operators at work in the exchange——

A. I think that was Exhibit Number 3.

Q. Represents actual operation?

A. Yes.

Q. Was the exchange in operation at that time?

A. The office was actually in operation at the time.

Q. That picture was taken?

A. Yes, sir.

Mr. Maltby: That possibly represents peak operation there doesn't it?

The Witness: Yes, this was taken in an office during the busy period.

Mr. Maltby: Now take the period say at nine o'clock at night at the same office, there would be comparatively few operators wouldn't there?

Mr. Burr: Use seven o'clock instead of nine.

Mr. Maltby: All right, say seven. How are those calls coming in at that hour switched? Is it so connected that they can be switched from one position?

The Witness: No, it is not. On this particular board, the line lamps on which the calls come in are multiple, so that until we reduce practically one operator in nine, that [fol. 8186] is, if we had nine in busy hour and kept reducing until we had one operator, she would still be able to reach any call that would happen to come in.

Mr. Maltby: Because it would show up in nine positions?

The Witness: It would show up on every third position, so that sitting in the middle position she would be able to reach the wire.

By Mr. Shuler:

Q. She does not need to run from her position to four or five positions down.

A. Not until it would get so that you had less than one operator in nine, which would be the night condition, possibly after ten or eleven o'clock.

Q. She would have to leave her position?

A. Then we would reduce the force to such a point that the calls would be answered by the operator going to the position calls come in.

Q. Are you doing anything to prevent being cut off by the operator? Gad, that is the biggest nuisance in Cleveland today.

A. Yes, we are continually studying — service proposition- and have introduced within the last two or three years a number of improvements which we feel sure—such as the fanning of cords on the B board—That the operator will take the cord, so that the cords come up and they will take that fanned out appearance rather than this appearance. We have also arranged so that the cords will cross to the least possible extent.

[fol. 8187] Q. I wish you would take some of your men off of the tree pruning division and put them on there?

A. Of course you have to consider on any proposition where we have either human or mechanical devices that there will be occasional things go wrong. Our endeavor is to reduce that both on cut-offs and other service irregularities to a minimum.

Q. I would like to get something for my own information locally. Why is it in Cleveland today we are having more trouble with disconnections than we have had in many years?

A. Do you mean cut-offs?

Q. Yes. Not only cut-offs, but to go to the phone, your phone rings and you go there, and they say, "Nobody on your line," or "Nu-ber please", or "Excuse me please." In my residence that happens at least twice a day.

Mr. Harshman: I didn't know your residence was in Dayton.

Mr. Shuler: This is Cleveland.

Mr. Harshman: That is an accurate description of Dayton.

By Mr. Burr:

Q. Mr. Allen, isn't it true that the inability to do the proper amount of tree trimming, due to the importunities of the owners of the trees, often introduce- and account- for disconnections such as referred to by Mr. Shuler?

A. Yes, any equipment trouble has a very direct reaction on the grade of service that is given.

[fol. 8188] Mr. Kinnison: Causes the cord to drop out of the hook?

By Mr. Dotson:

Q. You have made a study of the interruptions just talked about because they seem to be so prevalent; you regard them sufficiently important to command the study of the General Staff?

A. While there are any of them we will consider it so important we will give it study.

Q. Has your study resulted in your being able to determine the cause of the interruptions?

A. Yes, we have found many of the causes and as I instanced to Mr. Shuler, I gave one little means which we have used to try to reduce those, and that is only one of several. We have a traffic circular issued to the associated companies, in which we devote the whole circular to just such propositions as means of preventing cut-offs, means of prevent- wrong numbers and the various troubles that come up in the service.

Q. Have you found from your study that the same cause is to be found in all of these exchanges where those troubles exist?

A. No, there would be various reasons. One of them might be prevalent in one exchange and another in another.

Q. What are the most prevalent causes of those interruptions?

A. You are referring now to cut-offs?

Q. Yes?

A. Why they might be caused in some cases by failures on the part of the equipment, the supervisory signals or something of that kind, to function properly, and in other [fol. 8189] cases by a large percentage of new operators. If we run into a period of prosperity in a city and the girls show a high turnover, so that we have to take on many new girls, and we have to take these new girls whether we want

to or not, until we are able to train them to proper degree of efficiency, they will occasionally take down a call when they should not. We have instructed our operators, particularly new ones, instead of glancing at a cord and pulling it, to go up and manually trace it.

Q. You have found the cause to lie frequently within the exchanges themselves where the operators are working and due to the failure on the part of the operator to properly manipulate the equipment?

A. We have occasions where the investigation leads to very poor work on the part of private branch exchange operators, and on those occasions we get in touch with the people responsible and try to get them to train their forces, and we do keep a force to train private branch exchange operators.

Q. The reason I ask these questions is we are having an immense amount of trouble in Toledo about that, and I have been harangued a great deal by users about it and I had no means of advising or explaining or anything of the kind. I thought maybe you could give us some light. Can you tell the average time it requires to go through a call over the LaCrosse switchboard?

A. Yes, we have made studies on that. I think as I remember the figures it was about seven seconds.

[fol. 8190] Q. About seven seconds?

A. In order to be right within a fraction I would have to verify that.

Q. That is then a reduced time below that which is required over the boards used by the associated companies?

A. Compared with some of the boards, compared with for instance the board that would prove in in a city like Columbus; that is not the number one-C board in Youngstown; the work time on that as I remember it is about eight and a half seconds.

Q. Is it that reduced time which the LaCrosse board permits the call to be placed that you regard as the most important feature of the board which you are desirous of utilizing in all your boards?

A. Yes, that would be the only object in using a board of that kind, and in case that economy in operation can be secured without spending more money for additional equipment that offsets the gain in traffic, we would use that equipment.

Q. What is the so-called traffic unit and what is it in matters of seconds of time?

A. Well, that varies somewhat. The traffic unit that we use is one hour, which is 3,600 seconds, divided by 230, which is the basic unit. It gives you in seconds 15.65. That includes both the actual work time of the operator and the necessary amount of idle time which we have to have, that is, you cannot work an operator a hundred per cent of the time and get the signals answered and the various things happen so that the over-all time per unit is 15.65 seconds.

Q. What kind of a call would that be that would require [fol. 8191] that unit in matter of time?

A. The only call that corresponds to that is a local call on a standard Number One board. That is the one that more nearly corresponds to a unit than any other.

Q. That would only apply to a call through the same exchange?

A. Yes.

By Mr. Harshman:

Q. You divide 3,600 by 230. What is the 230?

A. The 230 is the average hour load which we consider standard.

By Mr. Shuler:

Q. That is about all a girl should do per hour is that right?

A. Yes, sir.

By Mr. Kinnison:

Q. These innovations that you have evolved for switchboard equipment, effecting the savings you have testified to, are they more or less adopted by all your associated companies?

A. Yes, they are very generally in operation through the associated companies.

Q. In compiling your figures do you do it on the assumption that they uniformly do it?

A. No, we do it entirely on the basis of the records showing definitely that they have been adopted, as we have in certain cases still B boards on which the ringing is done manually, and in arriving at a figure showing the saving due to that particular feature, we include only the boards

were the boards have actually been changed over to machine ringing.

Q. In some cases too expensive a job though?

A. Yes, there are many cases where a board may not be to a point where it will have to be replaced. That is, it may [fol. 8192] be that two or three years from now the board will have to be replaced. And that is taken into consideration, whether it would be advisable at this time to put in the board or whether it would pay for itself in the life of the board.

By Mr. Dotson:

Q. In the LaCrosse board is the cord selected by a machine switching equipment or is it a multiple lamp scheme?

A. In the LaCrosse board the switches select a lamp and the operator has to pick up a cord and plug in on that lamp similar to the Number One Board which I introduced as Exhibit Number One.

Q. That is done by a machine?

A. It is done by a relay switch which connects the subscriber's lines to a line lamp. A call coming in of a number of lines may be thrown on these line lamps, which are multiple through the different sections of the board.

Mr. Burr: May Mr. Allen be excused at this time?

Mr. Dotson: Just a minute.

By Mr. Dotson:

Q. Do you know the difference in time between the machine switching equipment which selects a cord and the multiple lamp scheme?

A. Yes, there is a matter of—There would be a saving of about three quarters of a second, if the call definitely came in on the operator's head set, rather than her having to pick up a cord and plug in on the jack.

Q. You say it would only make a difference of about three quarters of a second?

A. Yes.

[fol. 8193] Q. Is that regarded as a material difference by your Staff?

A. Yes, we would like to make savings of three quarters of a second if we could do it without spending too much for equipment so that we would have a net loss.

Q. Have you any way in any of your exchanges of machine switching equipment such as we are speaking about?

A. Just what do you refer to? To the distribution of calls by machines to cords?

Q. Yes?

A. Yes, that is the condition in the Wilmington board which I mentioned.

Mr. Burr: Will the Commission fix at this time the date when Mr. Rhodes and Mr. Allen are to return if at all?

Commissioner Poor: Does this finish your case?

Mr. Burr: No, but they are going to New York so that we can tell them later on.

Commissioner Poor: I think you better wait.

Mr. Burr: Let it be understood that Mr. Rhodes and Mr. Allen may leave the city today to return on call.

And thereupon the further hearing of this matter was adjourned to Thursday Morning, February 28th, 1924 at 10:00 o'clock A. M.

[fol. 8194] Thursday Morning Session

February 28th, 1924.

And also A. B. CRUNDEN, called as a witness, on behalf of The Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. You may state your name?

A. A. B. Crunden.

Q. Age?

A. 46.

Q. Where do you live, Mr. Crunden?

A. In Brooklyn, New York; I am employed in New York.

Q. What is your occupation?

A. General supervisor of accounting methods for The American Telephone & Telegraph Company.

Q. How long have you occupied that position?

A. For two years.

Q. Prior to that time what was your employment?

A. Well, I have been in accounting and statistical work for about 25 years, and I have been in the telephone ac-

counting and statistical work since 1910 when I entered the employment of the Chicago Telephone Company as general bookkeeper. At that time The American Telephone & Telegraph Company had developed a new and more accurate accounting system to meet the increasing demands of the business and I was brought into the system by the Chicago Telephone Company to install that accounting method.

[fol. 8195] I was subsequently auditor of disbursements of the Central Group of Bell Telephone Companies, consisting of *hwat* is now The Illinois Bell Telephone Company, The Central Union Telephone Company, The Wisconsin Telephone Company, The Michigan State Telephone Company and what was then The Cleveland Telephone Company.

Later I became general auditor of The Cleveland Company and vice president and general auditor of The Central Union Telephone Company.

When the Central Union Company was divided up, I was transferred to New York and became Assistant Chief Statistician of The American Telephone & Telegraph Company, and occupied that position for about a year and then assumed my present duties.

Q. You were then in the accounting end of the Bell System from the year 1910, continuously down to the present date?

A. Yes, sir.

Q. Before the so-called division or dividing up of The Central Union Telephone Company, did that Company operate properties in Ohio?

A. It did, Mr. Burr.

Q. To what extent?

A. Well, it operated generally throughout the State in most of the large cities exclusive of Cleveland and Cuyahoga County, which was served by The Cleveland Telephone Company.

Mr. Dotson: Mr. Burr, may I ask a question for information? The Central Union had local and long distance lines, did it not?

Mr. Burr: It had local lines, and some long distance.

[fol. 8196] Mr. Dotson: Yes, and all those local exchanges and long distance lines were taken over by the Ohio Bell?

Mr. Burr: Everything which the Central Union Telephone Company owned in the State of Ohio was taken over

by the Ohio Bell. By that I am of course referring to telephone properties.

Mr. Dotson: Yes.

Mr. Burr: And I am also excluding the depreciation reserves.

Q. Have you a chart of the General Staff organization of The American Telephone & Telegraph Company?

A. Yes, sir.

Q. Will you produce it please, and have it marked Crunden Exhibit No. 1?

A. Yes, sir.

And thereupon the chart above referred to was marked for purposes of identification as Crunden Exhibit No. 1.

Q. Is the chart which has been so marked the one to which you refer?

A. It is, Mr. Burr.

Mr. Burr: We offer it in evidence.

And thereupon the chart above offered was admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 1, and made part hereof.

[fol. 8197] Q. Tell the Commission of which department you are a member and what work is done in that department in behalf of the associated companies of the Bell system, including The Ohio Bell Telephone Company?

A. The department of which I am a member is the Comptroller's Department. You will find that the name of the Comptroller, C. A. Heiss, is shown in about the central part of the chart and on the second line from the bottom.

The Comptroller's Department performs, in behalf of the associated companies, what might be called the research and development work which is required with respect to the accounting, statistical and certain financial functions of the business.

This department also makes complete annual audits of the general books of the associated companies, including The Ohio Bell Telephone Company. It also maintains a close study of the financial needs of the associated companies and furnishes to them expert advice and assistance in procuring the large amounts of additional funds which are constantly required for additions and betterments.

The accounting and statistical work which is done in behalf of the associated companies relates both to the principles and to the concrete methods of administering the accounting system, and making a practical application of the correct principles.

We are continually studying in New York the most economical and efficient methods of recording, analyzing, and disposing of the many items of revenue, expense and prop- [fol. 8198] erty which have to be treated, and we are constantly designing and redesigning forms and preparing and distributing standard routines or methods.

The activities of the Comptroller's Department also include representation before The Interstate Commerce Commission in the numerous accounting matters that are constantly cropping out.

We also conduct investigation in cooperation with our Department of Engineering in connection with the economical purchase and use of materials, stationery and other supplies and of labor-saving machinery for electrical work.

Our work also includes advice to the associated companies upon the best methods of statistical work, and we send to them a large amount of information showing the financial and operating results of the various units of the System so as to assist them in estimating their own performances.

The necessity for all of the work of this kind is of course common to all of the Bell Companies and it is work which can be performed most economically and efficiently by a single group of specialists acting jointly for all of the Bell System companies.

Q. Are all of the services to which you have referred in that answer furnished to the associated companies and for their benefit by the General Staff?

A. They are, Mr. Burr. The total number of employes in the General Staff organization is about 1824. About three-fifths of them are men and the other two-fifths are [fol. 8199] the clerical force, mainly female. In the Comptroller's Department there are generally about 254 people. In the Financial Department, which is very closely allied with ours, there are 276 people.

Q. Take up next, if you please, the several branches of your particular Department and explain them briefly?

A. I would like to offer a supplemental chart which shows

on a larger scale the Comptroller's Department and its organization.

Q. Mr. Crunden, before proceeding with your answer and in order not to have to repeat the same matter over and over again, will you tell the Commission whether or not the services which you have been describing and are about to describe, are services furnished by the General Staff of the American Company, and particularly by the Departments to which you are referring, from time to time for the benefit of the associated companies, including the Ohio Bell?

A. I understand. I will talk with reference to that work specifically and I shall have that work in mind in what I say.

Q. I do not want to have to ask you each time whether a particular service which you have described is rendered to the associated companies, including the Ohio Bell?

A. Very well.

Q. And if it can be understood that all of these services to which you are testifying are rendered to the Ohio Bell Company, among others, it will shorten the inquiry. With that understanding, will you please proceed?

[fol. 8200] A. Yes, sir.

Mr. Burr: The chart just referred to may be marked Crunden Exhibit No. 2 and is offered in evidence.

And thereupon the chart above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 2 and made part hereof.

The Witness: Shall I proceed, Mr. Burr?

Q. If you please.

A. As I stated, there are 254 employes in the Comptroller's Department, and about 75 of them are experts in the ordinary sense of that term.

The men at the heads of the various divisions are men of considerable experience. Perhaps I might offer myself as an exhibit. And the men that report to the division heads, that is, for example, men reporting to me, are accountants of considerable experience and such men as would occupy positions of auditors of receipts and disbursements of railroad companies, or auditors of large sized corporations, or men that would be competent to go out and upon their own

experience and initiative conduct public accounting investigations.

Reporting to the Comptroller are a number of men who are shown upon the second line of the chart.

I will describe first the work done under Mr. Behan, the Assistant Comptroller, whose name appears at the lefthand [fol. 8201] end of the second line. A brief description of the work done in that division is printed upon the chart.

You will notice that my name appears on the next line below, in the second item from the lefthand end. I am in charge of what is known as the Methods Division. The Methods Division prepares the general accounting methods and bookkeeping procedures for the Bell system and revises these methods from time to time in accordance with the latest and best developments, and assists the associated companies in the detailed application to meet their respective requirements. This work is based upon a careful study of existing methods, and requires the services of experts in the several branches. The men that are engaged in this work have been selected by reason of their experience and ability to design accounting methods to meet the changing requirements of the business.

The development of these methods requires close touch with the associated companies through numerous personal visits and conferences as well as other correspondence in order to maintain an intimate knowledge of the developments and requirements in the territory of the various companies. There are over 25,000 different items of material comprised in a telephone plant, the accounting disposition of which each associated operating company is continuously confronted with as a matter of routine work, and there are thousands of other entries relating to payroll, vouchers, revenue, etc., which must be taken into account.

Now, there is a correct, economical and efficient way of [fol. 8202] doing all this work and many incorrect and unsuitable ways. The volume of the work is so great that any betterment effected in accounting treatment results in saving of cost.

The General Supervisor of Methods acts for the Bell companies in the development of accounting methods best adapted to the changing needs of the business. This work is necessarily continuous and it must go on if the results are to be obtained. Based upon our investigations we issue standard printed bulletins which provided routines and

forms with suitable alternative procedures to adapt the fundamentals to varying conditions in different parts of the country.

The General Auditors are in this way enabled to formulate their practices with a minimum of effort, with the assurance that they are modeling their routines upon the latest improved methods.

I skipped the Tax Accountant there in passing to my own name. The principal work of the Tax Accountant is the preparation of the consolidated income tax return for the Bell System.

The items of income and deduction of the associated companies are scrutinized by the Tax Accountant and his assistants, which assures that the companies are not placed at any disadvantage by the frequently complicated provisions of the tax law. We find better results are obtained if the problems arising are presented to a single source of contact with the income tax officials. At the same time the local [fol. 8203] officials are relieved of the time and traveling expenses which would be required if they had to present their own cases in Washington.

The next section is that of Chief Traveling Auditor. As I stated, we make annual audits of all of the Bell System Companies, and we also make numerous audits on what we call methods inspections. These are inspections to see that the most suitable methods continue to be employed.

Passing to the next main division we find the work of the Chief Accountant, Mr. Shaver. Mr. Shaver's work has to do with accounting principles and I can describe that better by means of some exhibits.

In the center of the chart we find the Chief Statistician, Mr. Andrews, and a considerable force reporting to him. I will describe the work by referring to some of the duties of the individuals reporting to Mr. Andrews.

You will notice that there is one sub-heading, "General Economic Statistics." This is worked on by Mr. Richter and several assistants. Mr. Richter was formerly instructor in economics at Harvard. He is in charge of the study of general business conditions and the preparation of various reports and analyses derived from these studies for the benefit of the associated companies. He also makes a special study of financial and investment conditions, upon the basis of which he acts in an advisory capacity to the

officers of the American Company upon questions of assisting the associated companies in financing.

The next sub-section is that of "Graphic Analyses," un- [fol. 8204] der the name of Mr. Richardson. This section has the work of preparing methods of analyzing operating data and devising the best methods of preparing graphical charts. The work of that section is spoken of in our office as "Mak- the account sit up and talk." That is, it is not sufficient to have an accounting system. It is also necessary to use it after you have it. And if you can make the figures sit up and talk and show you really what is going on, you have achieved the real usefulness of the accounting system, and a great deal of very useful work is done in that section.

The next section is that on "Statistical Methods and Mathematical Studies", in charge of Professor Belcher. Professor Belcher is a man of high mathematical attainments, formerly connected with Columbia University and the Sorbonne at Paris. He is in charge of studies of a statistical and accounting nature involving the application of mathematics; for example, depreciation accounting and actuarial analyses of the liability of the companies under the employes benefit plan, the study of fire insurance matters, and so on. He also has charge of the Department of Improved Technical Statistical Methods, including the methods which are used by the associated companies in the preparation of estimates of future operating and financial performances.

The next section, "Statistical Analyses", has to do largely with projections of performances and correlations of development along one line with developments along another line.

Then we have a section of "Personnal and Development [fol. 8205] Statistics." This section records statistically data on telephone matters in the United States which are useful for reference by the associated companies and issues comparative statements. It compiles the employes census of the Bell System in behalf of the associated companies, showing the age, sex, length of service, rates of pay, occupations, etc., of the employes.

It also compiles all necessary data on employes for the Interstate Commerce Commission's annual reports for the Bell System Companies.

We also maintain a large accounting and statistical library in New York, to which the associated companies

make reference. We find that that has considerable value. A great deal of information is available in New York or the near-by eastern cities which is not available in the country generally. We have requests from the associated companies for information, and they say, "We realize that this may put you to considerable trouble, and we don't want you to go to considerable trouble," but very often we know where to lay our hands on the information. The people in charge of the library are familiar with the repositories of statistical data.

The work of Assistant Comptroller Saxon I think is sufficiently explained upon the chart, and Assistant Comptroller Uhrig has charge of the accounts of The American Telephone & Telegraph Company. His position is very much the same as that of a general auditor for one of the associated companies. I think that work is also sufficiently [fol. 8206] described upon the chart. I might mention that there is some auditing work performed in behalf of the associated companies outside of this department; that is the work done by Assistant Vice President Cox, in auditing the Western Electric Company under the contract.

Shall I describe that, or is Mr. Cox to appear?

Q. I think you may describe that. We will probably save time.

A. We found that in checking the Western Electric Company in behalf of the associated companies it was well to have a very high grade specialist on the work. Mr. Cox is a thoroughly efficient telephone engineer and graduate engineer, and at the same time he is a thoroughly competent accountant and acted for quite a length of time as chief accountant for The American Telephone & Telegraph Company.

Q. What do you mean by checking the accounts as between the associated companies and the Western Electric Company?

A. I was about to describe that investigation.

The principal items of work are here; verifying the prices charged for telephone apparatus by the Western Electric Company to be the standard prices to all of the associated companies, so that one company is not treated differently from another; verifying that prices charged for cable, etc., are correct; verifying that percentages or fixed sums chargeable for special services and based on

cost are determined by correct and adequate studies; checking prices charged by Western Electric Company with prices charged by other suppliers for similar and [fol. 8207] equivalent articles, to verify that the associated Bell companies are obtaining the best prices possible and checking the services rendered to see that they are up to the standard and that the standard is improved if possible.

Q. What sort of accounting is in use in the Bell System and how has it been developed, if you know?

A. From the early days of the telephone business the American Telephone & Telegraph Company has developed accounting systems for the use of the associated companies. Systems were issued in 1884, 1891, 1897 and again in 1904, when the growing complexity of the business required close contact between the accountants and the engineers in determining the most suitable methods.

In 1909 the work became still further complex and a quite elaborate systems of accounts, which was found absolutely necessary to install, was made effective January 1, 1910, and that was the system to which I referred when I said that I was brought into the Chicago Bell Telephone Company to install a new system. That system was in use for three years and it probably would have been in use today except that the Interstate Commerce Commission set to work upon an accounting system in 1911 and held very numerous conferences with The American Telephone & Telegraph Company, and issued a system of accounts effective January 1, 1913.

In working on that problem they made a very careful study of all of the possible methods, including the method which was set up in the system which we then had and which was installed in 1910. The Uniform System of Ac- [fol. 8208] counts as finally issued was very similar to the standard A. T. & T. plan, and I think that tests the care with which our system had been prepared and the soundness of the accounting principles which underlie it.

Q. Have you any way of telling how much time was spent in preparing that system by the General Staff for the benefit of the associated companies and the amount of time consumed in conferences and other work with the Interstate Commerce Commission, out of which finally grew the Uniform System of Accounting for Telephone Companies prescribed by the Commission?

A. There were several expert accountants employed continuously on that work for a space of some two years, notwithstanding the fact that we had already issued our own system, because of the insistance of the Interstate Commerce Commission that the thing be very thoroughly and adequately gone over.

Q. That two years you speak of was the period consumed in work with the Interstate Commerce Commission and does not include any of the work done——

A. Since.

Q. By the General Staff prior to that time, and out of which grew the system adopted prior to the system of the Interstate Commerce Commission?

A. That is correct. We also had considerable work in the way of issuing the Uniform System of Accounts in the most desirable form for the use of the Bell companies. We reprinted that system, not of course changing any of the essentials, but elaborating and using our right, under the instructions of the Commission, to subdivide the regroup [fol. 8209] without impairing the integrity of the main accounts.

I am offering in evidence the accounting circular which embodied the result of that work.

Mr. Burr: It may be marked Crunden Exhibit No. 3, and offered in evidence.

And thereupon the circular above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 3 and made part hereof.

The Witness: It is called Accounting Circular No. 8.

Mr. Dotson: The system of accounting that you have been describing was developed by the A. T. & T. Company for the purpose of unifying the system of accounting in the best form possible to carry out the system of management and operation which the American Company desired to be observed by the associated companies?

The Witness: Yes, sir, it was done with the idea that there is one best way of doing these things, and that best way was offered to the associated companies. Prior to the adoption of the Uniform System of Accounts the associated companies availed themselves of that system in varying

degrees. Most of them adopted it substantially. I say all of them adopted it substantially, and I think most of them adopted it almost 100 per cent.

[fol. 8210] Mr. Dotson: In view of the Uniform System of Accounting prepared by the Interstate Commerce Commission, it made it compulsory on the part of the American Company and its associated companies to employ the same method of accounting throughout its business.

The Witness: To the extent that the Uniform System of Accounts goes, yes, sir.

Mr. Dotson: Well now, that system has conformed, you say, largely to the system previously prepared and inaugurated by the American Company throughout its associated companies' activities?

The Witness: There is a great deal of resemblance, yes, sir.

Q. Did the work of the General Staff in the matter of Accounting cease with the issuance of the Uniform System of Accounts by the Interstate Commerce Commission, Mr. Crunden?

A. No, sir, the issuance of the Uniform System of Accounts settled the question of fundamental accounting principles, but the preparation of such a system is one thing and the subsequent exposition of the underlying principles and the formulation of proper accounting book treatments for the complex transactions which are constantly presenting themselves is another thing. Almost as soon as the Uniform System of Accounts was issued questions began to come in to The American Telephone & Telegraph Company from the associated companies.

Perhaps I might illustrate it this way. Supposing that a new code of statutes was drawn up by the State of Ohio. [fol. 8211] That might terminate one phase of the work on the part of the lawyers, but it would not cause them to go out of business altogether, I imagine. And it was just the same way with this. All of the questions, or practically all of the questions which arose, had to be taken up with the Interstate Commerce Commission, and the American Telephone & Telegraph Company represented the associated companies in those conferences. That work is still going on as new things arise, and there have been 90 conferences with the Interstate Commerce Commission since 1913 that I know of, and perhaps more.

Q. Now when you speak of conference, do you mean just a visit to Washington wherein some representative of the General Staff called on some representative of the Interstate Commerce Commission and chatted with him for a few moments, or do you mean conferences of some duration?

A. There were some conferences which were very formal and which were called for both the Bell System companies and the Independent Companies, and which lasted for days. There were other conferences which approached the sort of conferences which you just described; that is, it was handled at Washington or at Philadelphia, and I think a few handled in New York and I attended some which were handled in Chicago, which were more or less informal in their nature and had to do with some special phase of the accounting.

Mr. Shuler: The American Company owning all of the stock of these companies, of course, those conferences were really for the benefit of the A. T. & T. as one of the com- [fol. 8212] panies, were they not?

The Witness: Well, in a way, yes.

Mr. Shuler: That is all.

The Witness: Because naturally it was to the interest of the American Telephone & Telegraph Company, as the stockholder, to see that the best methods were used, and it was equally to the interest of the corporation itself, the associated Bell Company, to be placed in the position to have the best method.

I would like to offer, if I may, an accounting circular, No. 12, which relates to this phase of the work, the making effective of the Uniform System of Accounts.

Mr. Burr: It may be marked Crunden Exhibit No. 4, and is offered in evidence.

And thereupon the circular above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company, and is herewith submitted, marked Crunden Exhibit No. 4, and made a part hereof.

Mr. Kinnison: I understand you to say you installed the system of accounts and the cost system of the Western Electric?

The Witness: No, sir, The Chicago Telephone Company.

Mr. Kinnison: Did the A. T. & T. supervise the system of accounting of the Western Electric?

[fol. 8213] The Witness: No, there is a separate accounting and statistical organization in the Western Electric Company and administered by the Western Electric Company officials.

Mr. Kinnison: Does the A. T. & T. organization, your statistical department, have any direct relation to it, any supervisory relation?

The Witness: No, sir.

Mr. Laylin: May I ask a question there, Mr. Burr?

Mr. Burr: Yes, sir, certainly.

Mr. Laylin: You spoke about Mr. Cox and work in connection with the Western Electric Company, verifying of prices of the associate companies of materials, and also the verification of prices of the associated companies compared with the prices to outside parties?

The Witness: Yes, sir.

Mr. Laylin: Did that work of Mr. Cox'- department comprehend any checking of the expenses of the Western Electric Company in connection with the manufacturing of these materials?

The Witness: Where that was involved in the contract it did, yes, sir.

Mr. Laylin: Was that information available, the result of that verdification?

The Witness: Why, you could bring Mr. Cox out here if there was any desirability. It does not touch my phase of the work.

Mr. Kinnison: You refer to manufacturing costs? Mr. Cox would be familiar with manufacturing costs; is that [fol. 8214] what you mean?

The Witness: I think he would be familiar with every phase of the Western Electric contract. His work is, you might say, in behalf of the associated companies. He does there as a specialist what the associated companies no doubt would wish to do for themselves and which they could not do as well because it would need the services of one employ- in each company to do what is done by him.

Mr. Shuler: May I ask a question?

Mr. Burr: Yes, but will you let me interject this remark first?

Mr. Shuler: Yes.

Mr. Burr: In connection with the Western Electric contract the Commission will recall that no question has heretofore been raised in any of the pending exchange rate cases on the subject of that contract and it has been fairly generally conceded I think that the contract and the relationships under it were not in issue in the exchange cases. That is the only reason why we have not called Mr. Cox to come out here and take up the time of the Commission with that phase of the situation.

Mr. Kinnison: I see that they intend to raise it in New York.

Mr. Burr: It has not been raised so far as I know in any particular cases here.

Mr. Shuler: No, it has not been, so far as I know.

Mr. Burr: I may say on that subject, Mr. Kinnison, that the contract was under investigation by the New York [fol. 8215] Commission and received the full approval of the Commission, if I correctly remember the record, and the contract and the relations under it having also been approved by the United States Supreme Court in the so-called Huston case, we have not thought it necessary to take up the time of the Commission and gentlemen with a separate presentation of that matter, and that is why I suggested that Mr. Crunden touch briefly the subject of Mr. Cox'- duties.

Mr. Harshman: May I ask him a question, please.

Mr. Burr: Yes.

Mr. Harshman: Mr. Crunden, does Accounting Circular No. 8 contain all of the instructions that are in force up to date? I notice it is dated January 1st, 1923.

The Witness: There have been changes since that time in the form of supplements. I did not bring them along because I did not wish to carry too many exhibits and confuse this proposition.

Mr. Harshman: How many supplements are there?

The Witness: Eight, I think. I would not say definitely.

Mr. Harshman: I think we should like to have those.

By Mr. Burr:

Q. Are they voluminous?

A. No, they are not voluminous. It simply adds to the number of exhibits on that. Yes, we can furnish them.

Mr. Harshman: Will you furnish them, please?

The Witness: Yes, sir. Will you make a note of that, Mr. Williams, please?

Mr. Shuler: You spoke awhile ago of verifying the con-
[fol. 8216] solidated income returns, I believe?

The Witness: Yes, sir.

Mr. Shuler: There is an advantage in that, is there not, in filing a consolidated return?

The Witness: Yes, I so stated, I thought.

Mr. Shuler: And the A. T. & T. or the American Company being the owner of all the associated companies, of course, it is for its interest to have the consolidated return made, is it not?

Mr. Burr: Just a moment please. It seems to me that we want to keep the record straight here, and that some confusion is likely to occur from the constant reference by counsel to the fact that the American Company is the owner of any one of the associated companies, for example, the Ohio Bell Telephone Company.

Now, the American Company is not the owner of that Company, and it has already been brought out several times that it is the owner of substantially all of the common stock, but only the common stock, of that company. And while I am not trying to correct counsel at all, I'm just trying to have that definitely understood in the record so that we will not be at cross purposes at some later time. I think the record shows somewhere also that there are more than 3000 stockholders in The Ohio Bell Telephone Company, in addition to the American Company as a stockholder.

Mr. Shuler: Preferred stock?

Mr. Burr: Holders of preferred stock, yes.

Mr. Shuler: I thought everybody was familiar with the
[fol. 8217] facts. I do not care to be pettifogging by saying owner rather than owner of the common stock. That is what I mean.

Mr. Burr: Yes.

The Witness: I might mention that the work which resulted in the issuance of the accounting circular No. 12, which is, I believe, Exhibit No. 4, is not work that is special to the telephone business. Precisely the same work was necessary and is necessary in connection with the Uniform System of Accounts for railroads; a similar work has been carried on with the Interstate Commerce Commission in be-

half of the roads by a committee known as the Committee on Corporate Fiscal and General Accounts by the American Association of Railway Accounting Officers. That is a large committee which has numerous sub-committees dealing with various phases of the accounting, and the cost of the work is borne by the individual carriers and is charged to their operating expenses.

Q. Is that a work which is a continuing one?

A. Oh, yes, it is going on now. The Commission is looking forward to revision of the railroad classification of accounts and also of the telephone system which may perhaps be revised in 1925.

Q. Now, right at this point, I recognize that the Commission and probably gentlemen in the room are familiar, at least to a large extent, with the magnitude of this accounting system as applied to the Interstate Commerce Commission's System of Accounting, particularly the one pre- [fol. 8218] scribed for telephone companies. But for the benefit of the record, can you briefly state what is involved in this matter of accounting. Give some idea of the attention paid to it by the Interstate Commerce Commission, the number of the men engaged in the work on the part of the Interstate Commerce Commission, the matter of meetings which are held, the conferences, and, in general, the wide, tremendously wide, scope of the business and the work which it entails?

Mr. Shuler: I object.

Mr. Dotson: It seems to me the question is rather a presuming one.

Mr. Burr: The question is withdrawn. Far be it from me to be presumptuous.

Q. Will you give the number of accounts to which charges and credits are made in the system of accounting prescribed by the Commission for telephone companies?

A. I have never counted them, Mr. Burr, but here is the book which I have just filed as Exhibit No. 3. I think it speaks for itself. It runs to 103 pages and is smeared, vulgarly speaking, with accounts of various kinds.

Q. There are several hundred of them, aren't there?

A. Oh, yes, as kept by the Bell System there are several hundred.

Mr. Dotson: You mean to say that the Exhibit known as No. 4——

The Witness: Exhibit No. 3, Mr. Dotson.

Mr. Dotson: Shows the various accounts which have been worked out by your staff.

[fol. 8219] The Witness: It shows those that are made mandatory by the Uniform System of Accounts, and also those which we have placed in the System in order to best adapt it to the needs of the associated companies.

Mr. Burr: At this point we would like to have identified as Crunden Exhibit No. 5, and offered in evidence, a copy of the Uniform System of Accounts for Telephone Companies prescribed by the Interstate Commerce Commission and referred to by the witness from time to time, with the understanding, if you gentlemen are willing to so agree, that that system has also been adopted and prescribed for telephone companies by the Public Utilities Commission of Ohio.

Mr. Dotson: If that is a fact.

Mr. Burr: I think the Commission will bear me out.

Mr. Dotson: I think the Commission will take judicial notice of its own actions.

Commissioner Poor: I don't think there is any question about that.

The Witness; In this Exhibit No. 4 the questions and answers are sometimes of very great importance and sometimes are comparatively trivial. A very great deal of work and a very great deal of discussion has been put in on some of them. And of course there are others that you could pick out that are not of great importance.

Question 47 says, "To what account should be charged fees and expenses of attorneys other than regular employes of the company engaged in the preparation of legal papers," etc. The answer is, "Account 201, organization." [fol. 8220] I think every accountant would know that.

Mr. Dotson: You mean attorneys fees are unimportant?

The Witness: No, sir, Pardon me for opening it at that particular place, Mr. Dotson. By turning to some of the other questions, for instance Question 39, there is an elaborate question regarding the charges when contractors perform construction work for telephone companies. And again No. 184 is a very important one indeed. It is very simple in its statement, "To what account should be charged

the cost of inventories and appraisal of plant?" But the answer takes up all of the various kinds of inventories and appraisals in detail and shows what should be done under all of the different situations and alternative situations.

The study of that is one requiring numerous conferences with the Interstate Commerce Commission to get settled.

Mr. Dotson: Are you introducing this Exhibit No. 5?

Mr. Burr: Yes, it is offered in evidence. No. 5 we will have to supply. In some of these cases copies of this exhibit already have been offered in evidence. If you gentlemen will indicate how many copies you want—I think you have most of them already—we will supply that.

Mr. Dotson: It is a strange anomaly to be offering that which you haven't got.

Mr. Burr: In order to cooperate with Mr. Dotson in his efforts to keep me straight, we now hand to the stenogra- [fol. 8221] pher Uniform System of Accounts for Telephone Companies as prescribed by the Interstate Commerce Commission. It may be marked for identification as Crunden Exhibit No. 5. There is within the cover of the Exhibit No. 5 a supplement to the first issue, with an introductory letter by the Chief Examiner of Accounts of the Interstate Commerce Commission, and we would like to have it understood that that is included in and is offered as a part of Exhibit No. 5.

And thereupon the document last above referred to, with the Supplement therein contained, was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company, and is herewith submitted, marked Crunden Exhibit No, 5 and made part hereof.

Mr. Shuler: You do not mean to say, Mr. Crunden, that accountants from all over the United States did not also go to Washington and work with the System on its System of Accounts, do you?

The Witness: The Independent Companies were represented through a committee, I think. In fact I know some cases where I saw them present. But the associated companies were not represented except through The American Telephone & Telegraph Company, otherwise than that some of the representatives came there as a matter of interest to themselves. For instance, at the time that I was in the

employ of the Chicago Telephone Company, when the hear-
[fol. 8222] ings were held in Chicago, I attended, but the active work was conducted by the General Staff representatives of the A. T. & T. who were more thoroughly competent to take up the matters.

Q. Now, you speak of hearings on that subject; hearings were held by the Interstate Commerce Commission, were they not?

A. Yes.

Q. And long hearings?

A. I said some of them were long, lasted several days; others were short.

Q. Yes. Do you know anything of the size of the department of the Interstate Commerce Commission which has to do with the Uniform System of Accounts?

Mr. Shuler: What is the purpose of prolonging this with questions like that, which are certainly not competent?

Mr. Burr: The question is withdrawn. I do not think it is important.

Q. Is it still necessary from time to time to get the consent of the Interstate Commerce Commission in these matters of accounting?

A. Oh yes, and will be.

Q. To what extent is your department in communication with the Interstate Commerce Commission and working on these matters?

A. We have very frequently to make trips to Washington to discuss questions which have been raised by the associated company's general auditors and get decisions on doubtful points.

Mr. Kinnison: It is purely an interpretation of that which in its nature amounts to a Federal Law.

[fol. 8223] The Witness: Yes. It is the fact that it amounts to a Federal Law that makes the thing of such great importance.

Mr. Kinnison: Your trips there are simply to secure an interpretation of the existing law?

The Witness: Yes.

Q. Is one of the subjects which has to be taken up from time to time with the Interstate Commerce Commission that of depreciation?

A. Yes, sir, that is one subject.

Q. We will come to that a little later on, but that is one of the very large subjects, isn't it?

A. At the present time it is one of the most active subjects. A great deal of work is being done on it.

Q. Does your department also do any work on the same subject?

A. Unfortunately we are very much involved in that, yes, sir.

Q. You say unfortunately. You mean from the standpoint of time involved?

A. I speak with personal feeling about the subject, yes, sir.

Q. Tell the Commission whether the Interstate Commerce Commission requires periodical accounting reports from the associated companies and what the Staff of the American Company has done with regard to such reports?

A. The Interstate Commerce Commission requires the filing of monthly and annual reports on the part of these companies. The monthly reports are comparatively simple documents. The annual report is very broad. Of course, the Commission knows that because a copy of it is filed here. [fol. 8224] Q. Let us see about that for a minute, You say the monthly report is a comparatively simple one. How many pages are there in the report for a company such as The Ohio Bell Telephone Company?

A. For the Ohio Bell?

Q. Yes.

A. It is one sheet very closely written on both sides.

Q. The report has to do in general with what subjects?

A. Plant—the monthly report?

Q. Yes.

A. The plant, stations, revenues, expenses, income.

Q. Could you give the Commission some idea of the size and extent of the annual report which is made up for the associated company and sent to the Interstate Commerce Commission?

Mr. Kinnison: It is a part of the Commission's report on file here, isn't it? We think it speaks for itself. I understood the witness to say it is on file here.

The Witness: Yes, sir, that is my understanding.

Mr. Burr: I think he can say how many pages are in it and the general scope of it without encumbering the record with a copy of the report.

The Witness: The general scope of it is very great. It is a sort of an accounting dragnet that goes through the whole system and it is designed to disclose anything that requires looking into and it requires quite a little time for preparation. The usual plan in the Bell System is for the associated company to make up a tentative copy of this report and forward it to our office in New York where we go [fol. 8225] over it carefully and see if there is any way in which we can improve it or if there are any respects in which it is incorrect or fails to comply with the desires of the Commission, and we then return it to the associated company without suggestions, which they can adopt or not adopt as they see fit. The result of that method of procedure has been that the inquiries coming from the Commission to the associated companies with respect to the annual reports have been very limited and unimportant. Our reports down there are in very good shape and show very few corrections. It is the custom of the Commission in reporting changes to require that the changes be made on the original sworn report, and it is quite possible to find down there annual reports on file which have been changed so radically that it is quite a reflection on the men that prepared them. But I am happy to say that you won't find that situation for any of the Bell System companies.

Mr. Shuler: May I ask a question there, Mr. Burr?

Mr. Burr: Yes.

Mr. Shuler: Are you familiar with those reports that are filed monthly by the various telephone companies?

The Witness: Yes, sir.

Mr. Shuler: Both Bell and Independent?

The Witness: No, sir, with the contents of them do you mean or the form?

Mr. Shuler: No, the contents.

The Witness: No, no, I am not familiar with the contents; that is, they change from month to month.

[fol. 8226] Mr. Shuler: But those reports are made out so as to show the revenue and expense of the company, are they not?

The Witness: Yes, sir.

Mr. Shuler: And they will show the operating costs of the Bell Companies and of the Independent Companies?

The Witness: Yes, in what might be called tabloid form, yes, that is true.

Mr. Shuler: It will show the per station cost of all the companies, will it not?

The Witness: The number of stations is shown there, but I don't recall for the moment positively whether the per station comparisons are introduced in those reports.

Mr. Shuler: Those reports are reliable, are they not?

The Witness: I hope so. Ours are certainly reliable.

Mr. Dotson: The work of the General Staff on the annual reports simply consists after all of a check-up of the reports as prepared and submitted by the associated companies for the purpose of ascertaining whether any incorrections or not are contained and to verify the correctness of them before they are sent in to the Interstate Commerce Commission?

The Witness: That is it, yes, sir. And in addition we have in New York a centralized bureau containing a whole lot of bookkeeping and tabulating machinery for making [fol. 8227] up the rather complicated report to the Interstate Commerce Commission respecting employes and their wages.

Mr. Shuler: Do you keep a duplicate copy of these reports from each associated company on file in the New York office?

The Witness: Yes, I think we do, sir.

Mr. Kimison: Are these monthly reports necessary other than in a consolidated annual report; that is to say, each of these companies operating as a separate entity, or will they assist in compiling the separate monthly reports as well as the annual reports?

The Witness: They would.

Q. Has the Interstate Commerce Commission promulgated any accounting or statistical methods for telephone accounting?

A. No, Mr. Burr, they have not. They have told us what we have to do but they have not told us how we have to do it. It is necessary for the telephone companies to determine their own best methods of carrying out the instructions of the Interstate Commerce Commission.

Q. Has that Department undertaken to do that for the associated companies?

A. It has.

Q. Have you an exhibit showing the accounting bulletin estimate routine?

A. I have.

Mr. Burr: It may be marked Crunden Exhibit No. 6, and is offered in evidence.

And thereupon the routine bulletin above referred to was marked for purposes of identification and was offered and [fol. 8228] admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 6 and made part hereof.

Mr. Shuler: At this point may I get some information?

Mr. Burr: If we can give it to you.

Mr. Shuler: I will ask, Mr. Crunden, in consolidating the income reports, isn't the party filing permitted to deduct from large gains of one company deficits of another?

The Witness: I am not in touch with that phase of the work and I would have to defer to a lawyer like yourself.

Mr. Shuler: I am not a lawyer on income tax returns.

The Witness: Well, I know the thing is more or less a specialty and that is why we have a man that does nothing else, but I really could not tell you about those tax reports.

Mr. Kinnison: Does the A. T. & T. file an annual report?

The Witness: With the Interstate Commerce Commission?

Mr. Kinnison: Yes.

The Witness: Yes, sir.

Mr. Kinnison: Do you file here?

The Witness: I think not.

Mr. Dotson: What does that income report include? What source of income, if you know?

[fol. 8229] The Witness: I have not seen the reports for years but it is my recollection it is filled out on the same forms as the ordinary annual report of telephone companies, additional sheets being inserts where the character of the work is so different that the forms are unsuitable.

Mr. Dotson: Do you know the various sources of revenue that are reported by the American Company?

The Witness: To the Interstate Commerce Commission?

Mr. Dotson: Yes. For instance, on the associated companies, do they report any other revenue than the license revenue?

The Witness: In their revenues?

Mr. Dotson: Yes.

The Witness: Yes, they report the revenues from the toll operation of the Long Distance Lines Department, and their income from interest on money that they advanced to the associated companies. In fact it would show all of their revenues from every source.

Mr. Dotson: Does that include the Western Electric revenues from the Western Electric?

The Witness: Yes, it would include the revenues from Western Electric, yes.

Mr. Dotson: What is the nature of those revenues?

The Witness: The A. T. & T. Company owns a large proportion of the stock; in fact I think it owns practically all of the stock of the Western Electric and receives a dividend, and that would be shown in that report.

Mr. Dotson: Would that same fact hold true with reference to the associated companies if they earned dividends? [fol. 8230] The Witness: Yes.

Mr. Shuler: Does the A. T. & T. file an annual report before this Commission of the revenues of intrastate Long Lines business in this state?

The Witness: I don't know. I am not familiar with that, sir.

By Mr. Burr:

Q. Mr. Crunden, is the compilation which is labeled Standard Estimate Routine Bell Telephone System, October 1, 1920 which has been marked Crunden Exhibit No. 6, the one to which you have referred as Accounting Bulletin Estimate Routine?

A. It is, yes, sir, and it is the work of my particular subdepartment; that is, it is issued by the General Staff and it is quite an elaborate bulletin. I do not offer it as an illustration of every bulletin we put out. It is an illustration of one of our more important bulletins. This goes into every phase of the accounting for construction and removals and rearrangements and changes of plant in connection therewith, and it is a very carefully studied publication. It was worked on for two years before it was issued and tied up several men almost exclusively.

It first of all contains a text showing what we consider is the best, most economical and most efficient method of handling these matters, and then follows with suggested forms, which the associated companies can either use as

they stand or can modify according to their requirements. It then goes into the question of plant records necessary [fol. 8231] in connection with such work and shows the best way of exposing information regarding the plant to be added and retired, with blueprints and other graphical representations. It then goes over into the accounting department and shows the manner of keeping the records of labor and material, etc., and of summarizing them most expeditiously.

Q. Was Exhibit No. 6 prepared at all by the Interstate Commerce Commission?

A. No, sir, the Interstate Commerce Commission does no work of this character at all. The only estimate that I know of that it ever made out was that it suggested a few very simple matters for the very tiny Class C companies, and they only did that because they were forced to.

Q. How is this routine kept up to date?

A. It would be kept up to date by means of supplements issued from time to time, and when the supplements had accumulated to where they represented any substantial part of the routine we would reprint it.

Q. Are you at work on the matter all of the time?

A. Yes, we have done much work on that bulletin since it was issued for the reason that it was issued comparatively recently, and it still represents our best thoughts upon the subject. But the trouble is that it won't stay put, so to speak. We shall have to change it undoubtedly with the changing conditions of the business.

Q. I notice that this routine Exhibit 6 supersedes and cancels a previous one, Accounting Bulletin 4B, dated August 10, 1917, was there effective prior to that date a routine something similar to this one?

A. Yes, sir.

[fol. 8232] Q. Prior to that time had there been other routines in effect?

A. Yes. The preceding routines were not as carefully thought out and as good as this. The work develops progressively.

Mr. Dotson: What are the most primary changes which the latest bulletins carry from the former bulletin?

The Witness: It provides suitable records for showing the plant that is handled under these so-called estimates, and it also has a very good method of accounting for the

expenditures in the office of the plant accountant; that is the office down near the job. It also has a very good plan for controlling the expenditures by means of an annual budget and it ties in all of these expenditures with the annual budget under which the associated company is controlling its expenditures.

May I interject a word here about that work "Estimate Routine"?

Q. If you please.

A. In the first place, the routine is usually thought of as some comparatively simple procedure that runs among semi-automatically after you have shown some cub how to carry it through. But this is on a very extensive scale.

Q. That is this routine you are now referring to, Exhibit 6?

A. Yes, it covers every phase of the work and it amounts to detailed instructions with alternative procedure in many cases, so that the term routine is a comparatively light term to apply to such a document.

I perhaps ought also to say that we use the word estimate [fol. 8233] there in more or less of an unusual sense. That does not imply that the figures as finally carried on our books are estimates. That is what I want to be sure is understood. Our plan is not to undertake any work of any consequence at all unless the thing has been properly thought out and put down in black and white and approved by responsible officers. And those authorities to take the work we call estimates, and that is how the term estimate routine develops.

Mr. Dotson: Are we to understand that in the latest bulletin the principal changes are in a more detailed elaboration of instructions, specific instructions, carrying with it alternative ways that may be followed that constitute the principal changes from the——

The Witness: The fundamental idea that is in this bulletin was in its predecessor. Is that the kind of answer you wanted?

Mr. Dotson: That partially answers it. What I mean is that the fundamentals of the present system disclosed by this exhibit were carried in the former, but you elaborated them more in this last instruction pamphlet which was sent out so as to make sure that they would be carried out more completely by the various associated companies?

The Witness: Yes. That does not mean that we necessarily added details. It means we have gone more into detail as to the best method of doing the work and we have adapted the fundamental idea to the business as the business progresses. That is characteristic of a whole lot of our [fol. 8234] work. We feel that in accounting we are on the right track in a great many things, but we — continually improving that track.

Mr. Harshman: Mr. Crunden, is Exhibit No. 6, including the instructions recommended by the General Staff, for use of associated companies with reference to the budget system?

The Witness: It does not carry the budget system, in itself, but it is designed to fit in with the system, of budgetary control of the associated companies.

Mr. Harshman: Could you furnish the circular, or whatever you have, with reference to the budget system of the associated companies?

The Witness: I don't think we have any circular on that.

Mr. Harshman: You have no circular?

The Witness: No.

Mr. Harshman: Is it covered in any printed matter at all?

The Witness: I am fairly confident it is not. I don't remember any at all.

Mr. Kinnison: Does the Ohio Telephone & Tele*phone* Company join in on your consolidated report as an operating company, or is it simply a real estate holding company in Ohio?

The Witness: Just simply as a what? As a real estate holding company?

[fol. 8235] Mr. Kinnison: Yes, or is the title to the real estate held by the A. T. & T. Company in Ohio?

The Witness: There isn't any doubt in my mind, although I of course obviously am not a lawyer, that the property operated by the Ohio Bell belongs to it and is operated as its property.

Mr. Kinnison: Does The American Telephone & Telegraph Company own any property in Ohio or has it organized a separate company for the purpose of holding this property in Ohio? I am speaking of the Long Lines?

The Witness: I don't know, sir.

Mr. Kinnison: You do not?

The Witness: No, sir.

Q. Have you an exhibit on the subject of Station Equipment?

A. Yes, I have.

Mr. Burr: It may be marked Crunden Exhibit No. 7, and is offered in evidence.

And thereupon the document last above referred to is marked for identification and is offered and admitted on behalf of The Ohio Bell Telephone Company, and is herewith submitted, marked Crunden Exhibit No. 7, and made part hereof.

Q. Will you explain the Exhibit?

A. This exhibit may very well be offered as a representative of one of our smaller standard routines. It has to do with a special phase of the accounting, namely, accounting [fol. 8236] for station equipment. It has principal reference to Account No. 607 of the Uniform System of Accounts, which is shown on page 88 of Exhibit No. 3. The text on page 88 is very limited and comprehensive—is very limited but comprehensive, I suppose I should say, but additional interpretation and analysis is necessary.

Now, this bulletin, composed of several pages, a little over five pages, shows what is really required by the instructions of the Interstate Commerce Commission on page 88, and it provides suitable accounts for recording the various kinds of information which are embodied in Account 607, station removals and changes.

You will find the sub-accounts recommended by the A. T. & T. Company on page 4 of this bulletin and I believe that the Ohio Bell Company are keeping practically all or all of those sub-accounts, and all or practically all of them are necessary.

Q. To what extent is this Exhibit No. 7 supplemented by further work on the same exhibit by the General Staff?

A. We issue additional memorandum on bulletins of this sort from time to time whenever there is any change in the conditions.

Mr. Dotson: There has been no change made from the system published in this bulletin since that date?

The Witness: No substantial change, no; just minor changes.

Q. Have you one regarding the matter of Measured Service Billing?

A. Yes, I have; that illustrates another phase of our [fol. 8237] work.

Mr. Burt: It may be marked Crunden Exhibit No: 8, and is offered in evidence.

And thereupon the document last above referred to is marked for purposes of identification and is offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 8, and made part hereof.

Q. To what extent if at all do the experts of your departments make visits to the associated companies in connection with the installation of these routines?

A. Should I say anything about this last exhibit at all, or would it speak for itself? I think it does speak for itself. I can say all I want to say very briefly; that is, that this Bulletin relates to measured service records and measured service billing, and it is in the form of a letter. That is the form in which we usually issue advices when they pertain to some special work rather than to the accounting in general.

Q. You are now referring to Crunden Exhibit No. 8?

A. Yes. Measured service is furnished usually in the larger cities; consequently the issuance of this bulletin would not apply as a country-wide proposition to all exchanges, but nevertheless it is a valuable bulletin in the handling of measured service billing because it shows the result of our study of the best way of handling that work. You can spend a lot of money on measured service, billing [fol. 8238] due to the great number of items that have to be accounted for, and it is very essential when the total revenue per call is low that the method of accounting should be stripped down to the absolute minimum and to the most economical basis possible. At the same time the work should be done in such a way that the employes do not become dissatisfied with the work in your attempted to achieve the utmost economy.

Q. You were going to discuss Exhibit No. 7, Station Equipment?

A. Oh, I did.

Q. You had finished that?

A. I had finished on that.

(Previous question read as follows: "Q. To what extent, if at all, do the experts of your departments make visits to

the associated companies in connection with the installation of these routines?")

The Witness: We make frequent visits to the associated companies; we necessarily must keep in touch with the work, with the business changes, and our men in New York could not keep up to date unless they went out into the field and were very closely in touch with the field. We have made numerous visits to Ohio of recent date and done considerable work here as we have pretty generally throughout the country; for example, taking some of the more important matters, in October and November, 1921, Mr. Van Zandt of our Staff visited Ohio and stayed one month in connection with the consolidation of the Ohio Bell and the Ohio State Telephone Company plants. At the time of the consolidation the plant investment of the Ohio Bell Company was [fol. 8239] distributed over the primary plant accounts in conformity with the Interstate Commerce Commission accounting regulations, but only a minor portion of the investment of the Ohio State was so distributed. The greater part of the investment of the Ohio State, including the plant acquired on the date of its organization, which I think we back in 1914, and several important telephone companies which it had acquired since that time, were carried in one general account. It was therefore necessary for some one who had the necessary detachment from other duties and the necessary competency to go to work and devise some means of distributing the plant investment over the primary plant accounts so that the investment of the two companies after consolidation could be stated on similar bases.

For this purpose study was made of the Ohio State Company plant back to the date of the organization, including the purchase of the several properties since that date. The inventories and appraisals of portions of the property which had been made from time to time were reviewed and were brought up to date by adding thereto net additions to plant since the dates of the various inventories. This revised appraisal was then used as a means of distributing to the primary accounts the book investment in plant.

Q. That was all done by a representative of the General Staff working in Ohio?

A. Yes, sir; Mr. Van Zandt is a former examiner of the Interstate Commerce Commission, of long experience, and he was also an accountant for the Federal Telephone Ad-

[fol. 8240] ministration under the Postoffice Department during the war.

Mr. Kinnison: Did I understand you to use the words "book investment?"

The Witness: Yes, sir. That is, you have to place the book figures. You cannot change them and turn them into value figures or anything like that.

Mr. Kinnison: You speak of the inventory being brought down to date and additions and betterments and then setting up book investment?

The Witness: Yes, sir, the redistribution of the investment which Mr. Van Zandt made was transferred to the Interstate Commerce Commission, and upon receipt of the necessary approval of that body the adjustments were made in the accounts. Mr. Van Zandt made three visits to Washington for conferences on that matter to secure the approval of the Commission for the Ohio Bell Telephone Company.

Mr. Kinnison: Now you spoke about your study of plant investment back through the years and you brought it down to date and made such changes as were necessary. In what particular would the plant investment account which had been kept during the years down to 1921 require any changes or readjustments, if such is the case?

The Witness: It was carried, as I stated, in one undivided sum, in one lump. That afforded no data for proper displacements of the various component parts nor for the proper treatment of depreciation nor anything that required analysis of plant accounts.

[fol. 8241] Mr. Kinnison: Where was this account kept? In the A. T. & T. office—that you are speaking of?

The Witness: The Ohio State?

Mr. Kinnison: Yes.

The Witness: No, it was kept on the old Ohio State Company's books which were turned over to us—I don't know whether they were permanently turned over to us, but they were placed at our disposal.

Q. I don't know whether Mr. Kinnison understood you or misunderstood you in answer to one of his questions. You don't want the Commission to understand that when this adjustment of book accounts was made the Ohio State Telephone Company's properties were put on the books of

The Ohio Bell Telephone Company at some appraised values that had been placed on the property?

A. No, I thought I made that clear.

Mr. Kinnison: What did you mean then?

The Witness: I mean that the book accounts of the two companies, at least as to their plant, were merged but that the Ohio Bell Company's plant was already kept in the proper detail, and with the proper sub-classifications to conform to the Interstate Commerce Commission accounting, whereas the Ohio State Telephone Company plant was not, and from the standpoint of good accounting it was necessary that that separation should be made and be made correctly so that the two accounts could be merged and thereafter treated as one account.

Mr. Dotson: That accounting study was made to make the adjustment you speak of for the purpose of a basis and [fol. 8242] means of determining the value of the plant, in concluding the purchase of it?

The Witness: No, sir, it had nothing to do with the value of the plant or nothing to do with the purchase of the plant. It was entirely an accounting matter and it had to do with getting the figures into the correct form under the Uniform State of Accounts to insure plant retirements being made in the proper way in ordinary routine and also to provide necessary data for determining the legal depreciation rates.

Mr. Kinnison: In setting up property values did you go to the records of the Ohio State Company or did you independently attempt to solve that?

The Witness: I did not do this work myself. I am telling you in a general way so much as I know of what Mr. Van Zandt did and that it involved one month's time on his part and two trips to Washington. But generally speaking it was a proposition of consolidating books figures and the value figure did not get into it.

Mr. Dotson: Well, the depreciation account—such an account was kept by the Ohio State Company?

The Witness: I have no doubt it was. I have no personal familiarity with their books.

Mr. Dotson: But the depreciation account differed from the Bell account in matter of rate of depreciation, did it not?

The Witness: I could not say. I am not familiar with their books, Mr. Dotson.

[fol. 8243] Mr. Dotson: In the study of the depreciation account of the Ohio State, was that revamped so as to conform to the rate of depreciation that had been followed by the Bell Company through the years?

The Witness: I could not say, sir.

Commissioner Poor: Mr. Crunden, do you mean that the Ohio State carried their plant account as a plant account in an entirety and it was not divided up so as to show how much went, for instance, to buildings, or how much to station equipment?

The Witness: Yes, sir, except as to certain additions made after a date that is unknown to me.

Commissioner Poor: This work that Mr. Van Zandt did was to take the total and to allocate it into the proper subdivisions?

The Witness: Yes, sir.

Commissioner Poor: So as to show what amount of that total should go to the plant accounting, building, station equipment, toll lines, etc.

The Witness: Yes, sir, he did that in such a way that he was able to obtain the approval of the accounts of the Interstate Commerce Commission.

Commissioner Poor: So that the whole of these subdivisions equalled the total as carried by the Ohio State?

The Witness: Exactly.

Mr. Dotson: You got that information from the records kept by the Ohio State Company, did you not?

[fol. 8244] The Witness: Well, as I say, Mr. Dotson, I did not perform this job myself and I am just generally familiar with it. I know that this service was performed, but the exact work undertaken by Mr. Van Zandt and what his negotiations with the Interstate Commerce Commission involved I do not know; but unquestionably that is in the possession of the auditor of The Ohio Bell Telephone Company and could be readily ascertained.

Mr. Dotson: Do you know of any company of the magnitude of the Ohio State that failed to carry its property account in any other way than in sufficient detail to show the various kinds of property allocated to the various subdivisions due to the nature and character of the property?

The Witness: Well, there you have a question that I cannot answer from lack of familiarity with the subject. I am not familiar with the books of the independent companies. I do not study their reports. In any case their annual re-

ports are too condensed to show whether or not they do keep such information.

Mr. Dotson: Well, they might keep it so far as you know? You are speaking now and answering me on the ground that your work has not enabled you to become familiar with their system of accounting to enable you to know whether they did or not?

The Witness: Precisely so, yes, sir.

Q. Now, you had only gotten as far as Mr. Van Zandt's study?

A. Yes, I was about to refer to another item of work that [fol. 8245] we performed. At the request of the General Auditor of The Ohio Bell Telephone Company we sent two experienced methods specialists to Ohio who worked between April and November, 1921, on a new set of administrative accounting routines made desirable by the change in organization and the progressive change in business—in the telephone business generally—in Ohio.

Q. During how much of that period were those men in Ohio?

A. One of them, Mr. Schultz, who is an expert on plant account, was in Ohio for a total of 130 days, and he was working continuously on the Ohio Bell work during that time. Unfortunately for me, Mr. Schultz made so favorable an impression on the people in Ohio that they asked to have him transferred from the A. T. & T. staff to their staff, which we agreed to do, and he is now Plant Accountant of The Ohio Bell Telephone Company. The other gentleman, Mr. Ohlander, spent 72 days working on other phases of the same general subject. These men worked out administrative accounting routines, of which I have copies if you would like to have them filed.

Q. You have spoken of these particular cases. Those do not represent all of the visits made by your experts to the Ohio Bell Telephone Company?

A. No. For example, in December and January, 1922 and 1923, Mr. Schmid, one of our men, made a methods inspection in Ohio which lasted six weeks and his work was embodied in a report containing a number of recommendations, which was sent to the General Auditor of the Ohio Bell Company.

[fol. 8246] Again, in February, May and June, 1923, another of our men, Mr. Bashan—Mr. Bashan is an expert in

clerical procedures and particularly with reference to revenue accounting matters—visited all of the revenue accounting centers of the Ohio Bell Telephone Company during a period of six weeks, going to Cleveland, Akron, Toledo and Columbus and made a number of suggestions for improvements and economy. His work resulted in a reduction in the Staff. But how many people it was I fail to recall.

Q. You mean in the Staff of the Ohio Company?

A. Of the Ohio Company, yes.

Mr. Burr: Now you may go back, if you please, to the exhibit on Administrative Accounting. It may be marked for identification Crunden Exhibit No. 9.

And thereupon the document last above referred to was marked for purposes of identification as Crunden Exhibit No. 9.

The Witness: This exhibit consists of a group of separate documents which I have enclosed with a rubber band. I don't know whethere that is a formal way of doing it. Shall I file them as separate exhibits or read the titles under one exhibit?

Q. Suppose you read the titles and if it may be understood that way, I offer them as one Exhibit?

A. Could we make it exhibit such a- number- a, b, c, d?

[fol. 8247] Q. Yes.

A. Now Exhibit 9a will be Accounting Bulletin No. 7; Exhibit 9b will be Accounting Bulletin No. 9; Exhibit 9c will be Accounting Bulletin No. 11; Exhibit 9d will be Accounting Bulletin No. 13; Exhibit 9e will be Plant Accounting Bulletin No. 5, Section 1; Exhibit 9f will be Plant Accounting Bulletin No. 6; and the last, Exhibit 9g will be Plant Accounting Bulletin No. 7.

Mr. Burr: We offer Crunden Exhibit No. 9, Bulletins a to g inclusive, in evidence.

And thereupon the bulletins above referred to are offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and are herewith submitted, marked Crunden Exhibit No. 9, Bulletins a, b, c, d, e, f and g, and made parts hereof.

Mr. Kinnison: What does "A" refer to?

The Witness: They are administrative accounting routines covering the handling of payroll, sundry disburse-

ments, freight and cartage and all kinds of plant accounting.

Mr. Kinnison: Bulletins issued by your department to the associated companies?

The Witness: No, they represent routines which ordinarily the Ohio Bell people would write themselves, taking [fol. 8248] their information from the standard methods which we turn out and from their knowledge of the field conditions, but whenever the general auditors of the associated companies are oppressed by the quantity of work which they have we are perfectly willing to send out our men to tide them over those emergencies and help them in writing up routines and instructions.

Q. Did you do that?

A. Oh yes, this was a case in point.

Mr. Shuler: Of helping?

The Witness: Of helping, did you say?

Mr. Shuler: Yes.

The Witness: Yes, sir.

Mr. Shuler: You were just helping them out?

The Witness: The help in this case amounted to doing the work. These routines were written by Messrs. Schultz and Ohlander, conferring with the local accounting men and obtaining their approval for all of the suggested procedure. These bulletins are not accompanied by the forms. There were a large number of forms designed in connection with them and to save space I did not bring those along.

Q. Have you an exhibit on the stub plan of revenue accounting?

A. Yes, sir.

Mr. Burr: It may be marked Exhibit No. 10 and we offer it in evidence.

[fol. 8249] And thereupon the document last above referred to was marked for identification, and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company, and is herewith submitted, marked Crunden Exhibit No. 10, and made a part hereof.

And thereupon a recess was had until 1:30 o'clock P. M. of same day (Thursday, February 28th, 1924).

[fol. 8250] Thursday Afternoon Session

February 28th, 1924.

And also A. B. CRUNDEN, resuming the stand for further direct examination, continued his testimony as follows:

Examined by Mr. Burr:

Q. Mr. Crunden, at the close of the morning session you had testified and there had been introduced in evidence Crunden Exhibit No. 10, which is the stub plan of revenue accounting. Will you describe the plan to the Commission?

A. The distinctive feature of the stub plan of revenue accounting is an additional stub, which remains attached to the subscriber's bill during the billing process, in the accounting department of the Telephone Company, and which is detached when the bill is released being retained as the company's account with the subscriber in lieu of the customary ledger sheet. The stub plan is an ingenious one, it is economical, it furnishes relief during the monthly peak period of revenue accounting, and it simplifies the labor, so that greater production and accuracy are realized.

Q. Can you tell us anything with respect to the savings accomplished by the plan?

A. When we initially developed the plan back in 1921 we made careful studies to find what the savings would be, and found that in the average area having principally flat [fol. 8251] rate accounts and a fair proportion of measured service accounts, that the saving would be about twelve cents per station per annum, so that in a company having say a half a million stations, the saving would be about $60,000 per annum. We have reports on file in New York from areas where the stub plan has been entirely installed and is now running smoothly that those savings have been realized.

Mr. Dotson: Is that the labor saving?

The Witness: It is a labor saving and partly a stationery saving.

Mr. Dotson: Partly stationery?

The Witness: Yes, but that is a minor part of it. The principal saving is in the labor.

Mr. Dotson: It did not affect the method of accounting that was covered by the use of this stationery in any way?

The Witness: No, it achieved the aim of the revenue accounting in accounting for the service in the bills with the subscriber in an equally satisfactory manner—in fact in a better manner.

Mr. Shuler: Mr. Crunden, can you bring us the reports of any one Bell Company for two years which will show that they actually made this $60,000 saving according to their reports?

The Witness: I am basing the $60,000 saving on a calculation affecting 500,000 stations as an average.

Mr. Dotson: A theoretical saving?

The Witness: It is an actual saving, but applied to a [fol. 8252] theoretical 500,000 stations. I do not think we have any reports on file in New York about that. I think that is developed by my people going out and by conversations that I and others have had with the general Auditors of the companies, as, for example, I might give you an illustration of that. I might say that Mr. Booth, of the Michigan Company, told me that the plan was saving at that rate in his company.

Mr. Shuler: That is hearsay.

The Witness: In the Michigan State Telephone Company. It is such things as that that justify us in developing these plans and giving them to the companies.

Mr. Dotson: In what way does the stub system do away with the individual subscriber's ledger?

The Witness: The old plan, Mr. Dotson, was to have a large ledger in which you placed the telephone numbers in serial order or perhaps the names of the subscribers in alphabetical order, and then opposite that you placed the exchange and toll charges each month and carried a running record. Those books were necessarily large and——

Mr. Dotson: That page carried a monthly account, did it?

The Witness: No, each page would carry a certain number of month's accounts serially and would contain the records of several subscribers. Now, the distinctive feature of this plan is that when you print the bill you print with it an additional stub, which is integral with the piece of paper, with the bill at the same time it is printed, and as [fol. 8253] you place the information on the subscriber's bill itself you also place it on the stub. At the proper time you then detach the stub and it serves you in lieu of a

ledger. In other words, we have no ledger with the subscriber today.

Mr. Dotson: You file the original stub away then as the record of the transaction.

The Witness: We file it away when reference to it has ceased. We use it in the bookkeeping process as long as there is any necessity in balancing, posting the cash and disposing of the account. But ultimately we file it away in lieu of the ledger.

Mr. Harshman: When did this go into effect?

The Witness: In January—I could not tell you the date offhand.

Mr. Kinnison: How do you know when you saved twelve cent a year per subscriber?

The Witness: That is based on our studies as to the actual time involved on the part of the clerks and addressograph people and others that have been actually doing the work under the one plan and the other.

Mr. Kinnison: Did you ever see it reduced to an actuality in the records of the company?

The Witness: As I say this work is done by my subordinate and men reporting to me and they thoroughly satisfied themselves in regard to these savings.

Mr. Kinnison: They have assumed certain typical cases and taken this twelve cents per saving.

[fol. 8254] The Witness: Yes.

Mr. Kinnison: They have never seen it worked out on the books of the company as a saving.

The Witness: When you introduce the stub plan, providing that there are no other circumstances to affect it, you can see a gradual descent in the expenses.

Mr. Shuler: Mr. Crunden, you never put the thing in operation in any associated Bell Company?

The Witness: Yes, sir.

Mr. Crunden: And saw the results among its employees?

The Witness: Yes.

Mr. Shuler: Give us that date.

The Witness: I cannot give that to you now.

Mr. Shuler: I want you to furnish that date and tell me what company it was.

The Witness: Well, the stub plan is now effective in practically all or all—I am not quite certain—of the Bell system companies today.

Mr. Shuler: Is it in Cleveland?

The Witness: Oh, yes.

Mr. Shuler: For how long?

The Witness: I think since the latter part of 1921; if not, the early part of 1922. And my men have been repeatedly to Cleveland in connection with this plan, and Mr. Bashant's visit of which I spoke was partly in connection with that matter, and in inspecting the installation they had made and making suggestions for its improvement [fol. 8255] and getting the utmost advantage of it.

Mr. Kinnison: You do not know yourself if that saving has actually developed in the cost of operating the company, do you?

The Witness: The Ohio Bell Company?

Mr. Kinnison: Yes.

The Witness: I cannot pin it down to twelve cents, but I am morally satisfied——

Mr. Kinnison: No, no.

Mr. Shuler: We don't want your moral satisfaction. We want facts.

Mr. Burr: When you jump at him, jump at him one at a time, not all at once.

Mr. Kinnison: We do not want to be discourteous.

Mr. Burr: I know you do not.

The Witness: You know when we determine on a plan of this kind we submit it to the associated company. The associated company examines it, and may decide it is a good plan to install. If it is, they install it. If they need assistance from us in installing the plan, we provide the assistance. Then we go away and leave it. At a later date, at their request almost invariably, but sometimes if we think it is desirable, we make an inspection. We inspect the installation of such a system to see that the fullest advantage is being realized from it, because by inspecting the installations of the same sort of routine in various parts of the country, you get a pretty good idea of [fol. 8256] all its adaptabilities. You see it in those various offices. From that time on our duty ceases and the actual financial results of the thing are available to the local general auditor. But as long as we know that the thing has proved in and made a saving, we would not carry in our heads the exact amount of saving.

Mr. Kinnison: But you have no actual basis for your statement then, have you?

The Witness: Oh, yes.

Mr. Kinnison: What is it?

The Witness: As I say it is based on the studies that we made as to how it would prove in at the time we studied the plan.

Q. What do you mean, "The difference of time between entering on the stub and on the ledger?"

The Witness: Yes, we——

Q. Took a number of stubs and counted the seconds on them?

The Witness: Yes, sir.

Mr. Shuler: Employees in your New York office?

The Witness: Yes.

Mr. Kinnison: You never checked up on the associated company to ascertain what the actual saving was in dollars and cents?

Mr. Burr: He has already said one company told him.

Mr. Shuler: That is hearsay. What your own hired employee told him is not evidence of it.

[fol. 8257] Mr. Burr: I think the Commission would accept that.

Mr. Kinnison: I think there is no evidence of that at all. It is just staff gossip.

Mr. Burr: If you have that out of your system we will go on to something else.

Mr. Kinnison: It is still very much in.

Mr. Dotson: Just let me ask a question then. How do you gather together these items from the stubs and keep them by monthly totals and classifications so as to know whether it is subscribers' revenue or toll revenue or whatever classification you make of it.

The Witness: With that plan we have developed what we call controlling records and these controlling records are balanced against the service orders which have to do with the installation and the change and the removal of subscribers' services, and we keep an overall control on the amount of revenue. When I say, "we" I have reference to the associated company under the plans recommended. We keep a controlling record from the total amount of revenue which the company is entitled to receive, provided no

reductions are made for loss of service, and we balance the stub records each month against those controlling records. At the same time we post the toll revenue to these toll statements, which are then summarized and the toll statements are attached to the bills and the amounts of the statements are inserted on the bill and on the stub.

Mr. Dotson: Now, these controlling records, they came [fol. 8258] into use simultaneously with the stub method?

The Witness: No, sir, they antedated the stub method. They were developed by the General Staff and are shown in a bulletin which is dated earlier than that one. The controlling records make possible the best installation of the stub plant.

Mr. Harshman: Can you give me the items which compose this twelve cents per station statement?

The Witness: You mean a list of the operations which are required under the stub plan and under the manual method?

Mr. Harshman: Whatever would be necessary in order to include all the items which go in to make up the twelve cents per station. Now, I presume those would be savings on items of performances by clerks and so forth that might be shortened or maybe eliminated. I would like to know what they are, and how you figure the saving on each one of those so as to arrive at twelve cents.

The Witness: I could not today, of course, but I could show you exactly how the work is done under the two plans and where the savings come in.

Mr. Harshman: Where the savings come in?

The Witness: Yes.

Q. Will you try to do that?

A. Yes, sir.

Q. Have you a complete list of the accounting circulars and bulletins which have been prepared and sent out by your department to the associated companies?

A. I have.

Mr. Burr: It may be marked Crunden Exhibit No. 11 and [fol. 8259] is offered in evidence.

And thereupon the list above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone

Company, and is herewith submitted, marked Crunden's Exhibit No. 11, and made a part hereof.

Q. Now the contents of Exhibit No. 11 are limited to circulars sent out by your own particular department, are they not?

A. Yes, sir, the comptroller's department.

Q. That is not a set of the circulars but merely a list of them?

A. Exactly.

Q. I have not seen a copy of the Exhibits yet. Can you tell me how many there are in the list?

A. I have not counted the list.

Q. Never mind then.

A. But the Exhibit runs to about five full pages.

Q. In connection with the accounting circulars sent out by your department to the Ohio Bell and other associate companies from time to time, has the recent consideration of the matter of depreciation advanced to the stage where the staff has sent out any circulars on that subject?

A. No, sir, it has not advanced to that stage. The situation is that in the week beginning May 1st last, hearing was held at Washington upon call of the Interstate Commerce Commission, lasted the whole week, and I was the first witness that went upon the stand and I was kept on [fol. 8260] the stand until Saturday and went fully into the matter of telephone depreciation.

Q. On whose behalf did you attend that hearing?

A. On behalf of the associated companies of the Bell system. Appearances were filed on behalf of all of the companies, including the Ohio Bell Telephone Company.

Q. Will you please state to the Commission some of the points which you have covered on behalf of the associated companies including the Ohio Bell Company at that hearing?

A. I made a statement as to what depreciation was and what it involved from the standpoint of the associated companies.

Q. For the benefit of the record will you re-state that?

A. I proceeded somewhat along this line. The subject is so complex, if you wish to make it complex, that frequently people fail to realize how essentially simple it is, but it is possible to put the proposition up in a fairly simple manner, and it is helpful to me to think of it along

these lines, about in this way, that it is the aim of the telephone accountant to keep true books of account when he prepares a balance sheet or an income statement, he must be as sure as he humanly can be that these documents reflect all accounting facts as to the company's condition and the results of its operations. He must show correctly the various items in the balance sheet, the assets and liabilities, and he must carry into the balance sheet the true net income from the operations. Of course, the operating [fol. 8261] net income cannot be correct unless the operating revenues and operating expenses are true and correct.

To have the operating expenses they must include all of the costs attributable to the operations. They must include labor, the traveling expenses, the freight and cartage and so forth, as well as all the supplies and property which are used up and consumed in furnishing the telephone service during the period under consideration. It should be clear, not merely to the accountant but to everyone, that the cost of whatever property is being used up in rendering telephone service is inevitably a part of the operating expenses. We know, of course, that the cost of some things is used up rapidly, as in the case of gasoline and stationery. Then there are other things that are not used up so rapidly, as for example automobile tires, storage, battery plates or switchboard plugs. And then there are items which are used up, relatively speaking, quite slowly, such as poles, wires, cables, heavy machines.

But there is nothing about this feature of difference to change the accounting principles. In any event the expense of furnishing service includes the cost of everything that is used up in furnishing it. Moreover the situation is not affected by how the property is used up, providing it is used up in operations. The expense is evidently an expense of operation, whether the property is worn out by rust or decay or whether it is destroyed sooner or later by storm, or whether it is discarded sooner or later by obsolescence [fol. 8262] or public requirement. It is this expense of property used up which is the depreciation of the accountant.

Depreciation, therefore, may be described as an expense which is occasioned in the operations of a telephone company by reason of the using up of its property in rendering service.

Because books are kept upon the basis of cost, the amount of depreciation is the amount of the original dollars which are being consumed, that is, the amount is fixed by the difference between the original cost of the property at the time it is placed in service and the net residual salvage or junk value which remains at the time the property is taken out of service.

To give the depreciation account its proper setting I should perhaps add a few further statements. As we all know accountants divide expenses into certain broad groups. The principal group in almost any undertaking is that which has to do with the conduct of the business, with the traffic or with the trading end of the business, according to the character of the corporation.

Usually the next important group is that which has to do with the cost of property and that is called the maintenance group. Maintenance divides itself broadly into two main classes. First, there is the expense occasioned by the work of keeping the property in good operating condition during its life in service, and this is known as current maintenance or repairs. And, second, there is the expense [fol. 8263] occasioned by the eventual using up of the units of property in rendering telephone service and the loss of its original cost in spite of current maintenance, and this is the depreciation that I have been considering. Depreciation itself is maintenance, but it is not current maintenance or repairs. Maintenance is a main group and depreciation is a sub-group under it. Current maintenance is another and different sub group. We cannot say that depreciation is repairs nor that repairs is depreciation. The distinction between the two is clear cut and there is no overlapping among them.

It is a fundamental rule of good accounting that charges for expense should be made to the period to which they relate or in which they are incurred, or, as the accountant says, in which they should be accrued, and that rule is rather rigidly adhered to in actual practice. For example, if an insurance premium covers a period of say three years, the cost of the premium is divided between the operations of the three years involved, regardless of when the bill is paid. Similarly, with items of property having a life of several years, the same treatment is given. If the cost of an automobile is lost, for example, due to the using up of

the automobile in the operations of say three successive years, then one third of the cost of the automobile, if there is no salvage, should be charged to each of the three years in question. In precisely the same way with an item of much longer life as for example, underground cable. The loss of its cost or whatever proportion of its original cost [fol. 8264] is lost should be spread over the life in service. That is, the period in which the lost is incurred and in which the expense arises.

I might add that theoretically there are some current expense items, some repairs which should be spread in a like manner to a certain extent. For example, the redecorating of a building, where there does not take place every year but every two or three years.

In practice, however, it is not usual to go into the amount of detail necessary to spread all of these items unless the amount involved is worth while, unless there is some substantial effect on accounting results. On the other side there are some items of property that are so small and inconsequential that it would not do to give them depreciation treatment. For instance, a hammer, an item of property so small that it can be better treated as an item of current repairs, notwithstanding its life in service may span very many accounting periods, providing it be not lost or stolen. The point I wish to make is that there is no different accounting principle involved whether the life of the item is long or short. The test the accountant applies is, does the expense rightfully belong in this or that accounting period. If it does it should go in.

Q. Are these conclusions and principles which you are stating those derived as a result of your study while a member of the General Staff and of your study of the subject as developed by the General Staff prior to the time when [fol. 8265] you joined the Staff?

A. Yes, sir. It should not, of course, be understood by that that the General Staff originated straight line depreciation.

Q. Have the benefits of the studies made by you and by other members of the General Staff been secured to the associated companies including the Ohio Bell Company under the license contract?

A. Yes, sir.

Q. While we are on the subject will you explain the various kinds of depreciation which apply to a telephone property such as that of the Ohio Bell Company?

A. I have stated——

Mr. Kinnison: Will your answer to that question be the course which is followed by the Ohio Bell in setting up its depreciation account?

The Witness: The answer that I am now about to make?

Mr. Kinnison: Yes.

The Witness: Yes, sir. I have already stated that the cost of physical property used up in furnishing telephone service is depreciation regardless of cost, but I can enumerate the principal causes, and they are as follows: The first is what is commonly known as wear and tear, but which I think is better described as rot, rust and decay, that is, the gradual wasting away of certain classes of plant due to exposure and to the action of the elements other than through casualties such as storms. A good example of that is a pole which rots away at the ground line, due to the fact that fungus attacks it as that point, the fungus requiring [fol. 8266] both the moisture in the soil and the proximity of the air.

Then there is obsolescene. Obsolescence may be due to advances in the art, which may be occasioned by equipment changes in a desire to give the best possible service. An example of that would be the old style ring top poles that were used out here in various parts of the country, where a very large pole was placed in the middle of a block and a large number of drop wires run from that pole to the houses of the block so as to give somewhat of an umbrella effect. That is an old style of giving service which has been discontinued in nearly every part of the country because obsolescent.

The third occasion of depreciation is inadequacy. Owing to the continued growth of the country, which makes it desirable to take plant out of service notwithstanding that it has not deteriorated altogether or even in substantial part through rust or decay. We have illustrations of that in the substitutions of large cables for single wires or the substitution of large underground cables for smaller aerial cables.

And then there are many cases where the amount of central office switchboard required causes the building to

become inadequate, requiring the provision of a larger building.

The fourth occasion of depreciation is public requirements. These come in connection with the removal of pole [fol. 8267] lines from streets to alleys or where plant has to be placed underground in the principal business thoroughfares.

A fifth cause is storms and casualties. Property is destroyed frequently — sleet storms, sometimes by windstorms.

Q. Has the effect of these factors been studied by your department with reference to their application to the property of the Ohio Bell Telephone Company?

A. Do you mean the engineering effect?

Q. Yes.

A. Not the engineering effect.

Q. Has the effect of them as items which should be taken into consideration by the Ohio Bell Telephone Company been studied by your department?

A. Yes, and we have concluded that they are all proper parts of the category of expense known as depreciation, and that they can be directly worked into the depreciation treatment so as to give consistent results.

Q. What is the fact as to the importance or non-importance to the Ohio Bell Telephone Company of such elements or factors as obsolescence, inadequacy and public requirements in the matter of depreciation as applied to the property of the Ohio Bell Company?

A. It is a matter of common knowledge, of course, that all of those causes are operating not only in Ohio but elsewhere throughout the country.

Q. As further reflecting on this subject what roughly speaking, has been the growth of the telephone business in the United States since say the beginning of this century?

A. Why to the best of my recollection we had about [fol. 8268] 800,000 at the beginning of the century and we now have about eight million. That is a growth of about a million.

Mr. Shuler: Who is "we"?

The Witness: The associated companies of the Bell system.

Mr. Kinnison: May I interrupt with a question before you pass on, Mr. Burr?

Mr. Burr: Yes, sir.

Mr. Kinnison: You used the word "cost" as the basis upon which you base your depreciation charge. What do you mean by "cost"?

The Witness: I mean the amount shown on the books.

Mr. Kinnison: The actual cost?

The Witness: Oh, yes.

Mr. Kinnison: That means actual cost of construction.

The Witness: Generally speaking it is actual cost of construction, yes, sir.

Q. Has your department studied the matter of what entries are to be made in books of account of the Ohio Bell Telephone Company and the other associated companies with reference to depreciation expense?

A. Yes, we have given very careful thought to the proper manner of setting up the depreciation.

Q. Has the Ohio Bell Company had the benefit of that study?

A. Oh, yes.

Q. Will you illustrate it for a moment?

A. Our view of the matter has led us to this conclusion, [fol. 8269] and I think it is an absolutely sound one. In a double entry system of bookkeeping, such as is almost universally employed, when you place in the accounts and monthly or annual charge for depreciation expense—and in our telephone companies the depreciation is taken into the accounts monthly—it is necessary to have some sort of suspense account, where the contra-entry or credit can be lodged. In a single entry system of bookkeeping a charge to expense would in and of itself be sufficient to insure the integrity of the accounting. So that the prime side of the entry, the important feature of the accounting, is the charge to expense, which is necessary to show the total expense of rendering service, and thereby arrive at the true net income.

Now, the credit which arises by reason of the double entry system of bookeeping and on account of the charge to expense is placed a temporary lodging place which has been called the reserve for depreciation. In the uniform system of accounts it is entitled reserve for accrued depreciation account. This credit will go on accumulating from month to

month as the successive months' installments of depreciation expense are accrued. At the end of a certain length of time the item of property or the class of property to which the debits and credits have related will be retired from service and at that time the amount at which such items stand charged to the plant account should be credited to that account, the salvage should be charged to the sup-
[fol. 8270] plies account or to the person who receives the salvage, and the balance, representing the loss, should be placed in the reserve account and offset against the reserve, and it is finally wiped out, and, therefore, all recognition of the depreciable unit or item of property disappears from the book. You might say this as a general rule, extinction of depreciable capital on the books is always accompanied by extinction of the reserve account raised upon the books in respect to the same property loss.

Mr. Dotson: In what way? Can you explain it?

Q. Take the example of a thousand dollar automobile.

A. In the case of the thousand dollar automobile the original entry would be to credit accounts payable and charge plant with the automobile. Now, we decide that the automobile is going to last in service for four years. Each year we should charge depreciation expense with $250.00 and credit depreciation reserve account. During that four years in succession we have so treated $1,000, which is the entire loss on account of the retirement of the automobile,——

Mr. Shuler: Don't you allow anything for interest?

The Witness: No, sir, it is not necessary to take interest into account in this treatment, and the introduction of interest calculations into the treatment would produce erroneous results. At the end of the four years you have $1,000 in the plant account for an automobile immediately to be retired and $1,000 in the reserve account. The debit to the automobile account is carried on the asset side of the bal-
[fol. 8271] ance sheet. The reserve for depreciation account is carried on the liability side of the balance sheet. When the automobile is retired, you offset those two items, that is, you credit the plant account and debit the reserve account. That results in cancelling the whole transaction out of the balance sheet just as though it never existed.

Mr. Dotson: Suppose it would be the case of property

that is not retired at the end of the depreciation period. How do you dispose of it then?

The Witness: You mean, for example, if we had an automobile and it was worn out and instead of the report being made that that capital had been consumed, that we allowed the automobile to remain somewhere and did not make proper accounting entries.

Mr. Dotson: No, I did not mean that. I mean a property that has a more or less indefinite lifetime period, although your depreciation account is carried on a ratable period, say of ten years, and it outlives ten years; you find at the end of ten years that the property is still capable of being operated in service; you have already charged off now the cost of it. What do you do with the property when you find it is still serviceable?

The Witness: May I defer answering that question until after I have placed in evidence an Exhibit that I have here which will lay the foundation for a correct answer and perhaps clear the thing up better.

Mr. Dotson: I have no objection at all.

[fol. 8272] Q. While we are on that subject, let me ask you whether the reserve account serves any other useful purpose than to act or serve as a suspense account or temporary lodging place for the credits which arise in the double entry system as the result described by you of making the debits to the operating expenses for the monthly installments of the depreciation charge.

A. That question I think I can answer better after I have placed these Exhibits before the gentlemen here. The first one I would like to introduce is entitled "Illustration of Method of Determining Annual Depreciation Expense."

Mr. Burr: It may be marked Crunden Exhibit No. 12, and we offer it in evidence.

And thereupon the paper writing above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 12, and made a part hereof.

Q. Now, you may proceed with the discussion of the Exhibits and also the answer to Mr. Dotson's question if you are prepared to go into that now?

A. No, I have another Exhibit coming which will tie the thing up very nicely.

Q. Shall we offer that Exhibit now?

A. I think not, I think we better take one at a time so we won't get mixed here.

[fol. 8273] Q. Very well.

A. In this I show some typical classes of telephone property in the first column, and in the second I have placed the items of cost. I might say that this whole Exhibit is merely illustrative or perhaps you might call it hypothetical. In the third column I show the average service life of the respective classes of property in years. In the fourth column there is the gross salvage, that is the gross amount that you obtain from the property, if anything, at the time this useful life of service is terminated. In the first column I show the cost of removal, which is a charge upon the gross salvage. And in the sixth column I show the really significant salvage figure, which is the net salvage or the gross salvage minus the cost of removal. In the seventh column I show the per cent that the net salvage is of the original cost of the same property. In the eighth column I show the amount of the property cost which is used up, that being the cost column, two, minus the gross salvage—minus the net salvage, column 6. In column 9 I show the per cent that the property cost used up is of the total cost. In ten I show the depreciation rate expressed as a percentage of the cost of the property, arrived at by dividing——

Mr. Dotson: That is the annual depreciation rate.

The Witness: Dividing column 9 by column 3. In the last column, column 11, I show the annual depreciation expense expressed in dollars as derived by the application of the percentage in column 10 to the cost as shown in [fol. 8274] column 2. The rates shown in column 10 are sometimes called the element rates of depreciation or the component rates. And they are the true depreciation rates. Frequently reference is made to a composite rate of depreciation. When the engineer speaks of depreciation he is referring usually to the component rates. If you say to the engineer, "What is your depreciation rate?" he will say, "Do you mean the rate on cables or the rate on poles, or what rate do you refer to?" But the accountant, who usually has to talk to financial men and to business men, who want some quick answer regarding the plant as a

whole, are accustomed to speak of the composite rate. That is arrived at by taking the total cost of all of the various classes of property involved, and dividing it into the annual depreciation expense, arrived at by properly weighting the individual classes of expense in accordance with individual amounts into the total and procuring a composite depreciation rate. The composite depreciation rate is therefore accidental. It depends upon the amounts of the depreciation, of the element or component rates of depreciation, and the accidental weighting in accordance as there is more or less of longer lived or shorter lived property or property having a high or low salvage value respectively.

Mr. Dotson: It really represents the average life.

The Witness: Yes, sir, it is a weighted average. As an appendant to that I would like to offer a couple more of Exhibits.

[fol. 8275] Mr. Burr: They may be marked Crunden's Exhibits Nos. 13 and 14 respectively and we offer them in evidence.

And thereupon the paper writings above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and are herewith submitted, marked respectively Crunden's Exhibit Nos. 13 and 14, and made a part hereof.

Mr. Dotson: Before you get away from this, just one question we want to ask with reference to it, to this one subject you are speaking about. The percentage of annual depreciation, the rate of annual depreciation as shown in column 10, are those the rates which the associated companies employ in carrying their depreciation?

The Witness: No, sir, those depreciation rates are hypothetical and do not apply to any particular company or condition whatsoever.

Mr. Burr: There will be a witness on that subject at a later point, Mr. Dotson.

Mr. Dotson: All right.

Mr. Kinnison: The actual worth of your depreciation charges here is reflected upon the truth of the data supplied to you as to actual depreciation, is it not?

The Witness: Yes, sir.

Mr. Kinnison: Coming down finally to an engineering

proposition as to how much a certain class of property de-
[fol. 8276] preciates.

The Witness: That is correct.

Commissioner Poor: Do you intend this Exhibit to be any more than illustrative of the method?

The Witness: Illustrative of the method only.

Commissioner Poor: And the figures in your third column do not represent, or are they intended to represent, experience of the company in any way?

The Witness: No, sir.

Mr. Shuler: They are not supposed to illustrate the experience of the company?

The Witness: They are illustrative. I did not want to put preposterous lives in here which would apprise you of that, because the thing might then look ridiculous.

Mr. Shuler: This is just an example of your method.

The Witness: Yes, sir.

Mr. Shuler: And has nothing to do with the telephone business particularly.

Mr. Burr: It has something to do with the telephone business. But we will offer a witness later on.

Mr. Shuler: I get the point. He has taken that because he is in that line, but he does not mean to say that these are the lives of those particular items.

Q. Now, going back to my previous question, I will ask you whether the reserve account of the Ohio Bell Company has any other useful purpose than to serve as a suspense account or temporary lodging place for the credits which [fol. 8277] arise in the double entry system as a result of the making of debits to the operating expenses for the monthly installments of the depreciation charge?

A. I think Exhibit 13 will enable me to answer that question. But it just occurred to me, if I may delay the proceedings a trifle longer, that I ought to file Exhibit 14 with Exhibit 13, because it refers to the same subject matter and will illustrate the facts in 13.

Q. It has already been offered in evidence.

A. Then I am off. It must be 14 and 15, because I have some charts which are appendant to this Exhibit marked table A and table B. These sets of graphical charts which make clear better than you can see by handling the figures on table 13 the exact relations of those figures, one to the other. It is called chart, A, B, C and D.

Table A of Exhibit 13 shows the correct manner of arriv-

ing at the average life of a homogeneous group of telephone property, such as for example poles, although the property is described here abstractly as units. There are a thousand units, and these units go out of service at a certain rate. Five units go out the first year, seven the second year, eight the third year and so on. And as you approach the average expectancy of life of that kind of property at about the 9th, 10th, 11th and 12th years, the major portion of the group go out of service. A certain number of stronger or more fortunate survivors continue in service for various periods thereafter until at the twentieth year the last five have gone out of service and the life of the [fol. 8278] entire thing is terminated. Now, to arrive at the true life for depreciation purposes, you have to secure a weighted average by multiplying the number of units by the number of service years, so as to obtain what you may call the unit years, and the summation of the total unit years divided by the number of units gives you the average service life. That is shown in the calculation at the foot of the table.

Table B is an illustration of the accounting on the books with respect to a similar group of property. At the beginning of the first year the investment is a thousand dollars. During the first year $5.00 comes out of service due to the retirement of five units. The average investment for the year is decreased to $997.50. The depreciation rate is ten per cent, because the average life of the property is ten years and there is no salvage. We apply ten per cent to the average investment of $997.50 to obtain the proper charge to expense for the first year, amounting to $99.75. That is placed in column D under the heading of analysis of entries passing through depreciation reserve account. In the same year the five units which are retired from service are charged against the depreciation reserve account at the same time that they are credited to the plant account, so that the net annual change in the reserve account is $94.75. And since this is the first year that constitutes the balance remaining in the account at the end of the year.

Now, the procedure in the subsequent years is precisely the same, and the noteworthy thing is that the credits the [fol. 8279] annual credits, continue to be in excess of the debits until the seventh year inclusive, as shown by column F, after which the debits become in excess of the annual credits, and so tend to reduce the existing balance in the

reserve from time to time until at the end of the time shown by the table, that is, the twentieth year, the whole of the reserve account has been wiped out coincidentally with the going out of service of the last survivors of the group.

The charts which accompany table A and table B show that investment begins with a thousand dollars and that there is a decline in the investment every year until the whole investment is wiped out. Chart B shows the balance in the reserve for depreciation account.

Q. Are you now referring to Exhibit 14?

A. Yes, sir. It goes on increasing up to a certain point where the principal part of the retirement comes into full play and thereafter decreases to zero. Chart C shows the annual charge to expense follows a similar curve to the investment. When the investment is high the charge is high. When the investment is decreasing the charge decreases correspondingly, and when the investment is gone, no further charges are made because no further charges are necessary.

Chart D shows the annual retirement of the units and corresponds to the first column of table A. This chart is headed annual mortality, for the reason that it indicates what may fairly be described as a mortality curve.

Now, answering Mr. Burr's question first—I guess you [fol. 8280] gentlemen have in mind what it is or should we read the question? We have had it twice.

Mr. Shuler: I think we have it.

The Witness: It is the proposition of whether the reserve account serves any other useful purpose than to serve as a lodging place for these credits. Any my answer would be yes, that it does, for this reason, that just as by looking into an actuarial table of a life insurance company you can find from time to time the average remaining life expectancy of a group of individuals, so by looking into the depreciation reserve account balance from time to time you can, if properly kept show the accumulated liability to date for future retirement of plant presently in service which is deteriorating but which has not yet reached the end of its useful life.

There is one point I would like to bring in there, and that is this, I have shown these Exhibits relating to what I call the homogen-ous group of units. There are cases where it might be desirable to account separately for the units.

But generally speaking it is necessary to account for the units in groups, and when that is true, attention ought to be called on that to this point, that the depreciation reserve calculations are based upon the average service life of the group of units, and when you are talking about groups, where the units are averaged in together for depreciation treatment, it is improper to speak of the amount which has been credited to reserve of a particular unit, since the re- [fol. 8281] serve has necessarily been accrued in respect to the whole homogen-ous class of property, consisting of a multiplicity of units exhibiting various individual lives. The actuarial basis as applied in life insurance involves in the computation of premiums the recognition not only of a life expectancy for a large group of individuals, but also of a mortality curve representing the manner in which their respective ages at death will be distributed at the average age at death, and it is precisely the same with depreciation. That is why I have inserted that column D showing annual mortality.

Q. Chart D?

A. Yes, Chart D. Does that answer your question?

Mr. Harshman: Exhibits 13 and 14 are purely hypothetical, are they not?

The Witness: The figures shown in here?

Mr. Harshman: Yes.

The Witness: Yes, but they are illustrative of true principles.

Mr. Harshman: But the figures are purely hypothetical.

The Witness: Yes.

Mr. Shuler: Mr. Crunden, Exhibit 12—do you think that method of depreciation is fair to the utility and also to the rate payers?

The Witness: Yes, sir, eminently fair.

Mr. Shuler: Now, the idea of it is that at the end of the life you will have a sum equivalent to what has been used [fol. 8282] up. That is correct, is it not?

The Witness: Yes, sir.

Mr. Shuler: Now, take the item of buildings, the first item, 25 years. You set out a sum each year so that at the end of the 25 years the capital will be intact—$2,132.00; that is right?

The Witness: Yes, sir.

Mr. Shuler: Repairs on the building are taken care of otherwise, are they not?

The Witness: Yes, sir.

Mr. Shuler: At the end of 25 years your $2,132.00, with simple interest at five per cent, instead of amounting to $28,700.00 amounts to a little over $49,000.00; how is that fair to the rate payer?

The Witness: Would you mind reserving that question until we get through with the whole story and then I will bear that in mind and be very glad to answer it. I will answer it now if you prefer, if you are going to leave or anything like that.

Mr. Burr: Yes, I have reserved one or two questions for Mr. Kinnison at his suggestion, and if it is satisfactory to Mr. Shuler, I will put him on the list, too, as wishing to ask this question at the close of this statement. Will that be all right?

Mr. Shuler: That is all right. I don't care when I get it.

The Witness: Ordinarily it is very easy to answer those [fol. 8283] questions but this question is a little more difficult than the average subject.

Mr. Shuler: It is immaterial.

The Witness: And we want to keep a firm footing under ourselves and not get tangled up.

Q. There are at this point one or two questions that I want to get clearly in mind, and the first is as to whether there is a reserve in the sense of a separate fund on account of depreciation under the straight line method of depreciation account which you have been discussing?

A. No, there is not. The reserve as used by accountants is virtually a slang term. You won't find it in the dictionary. Our use of the word "reserve" does not conform to the dictionary distinction. The reserve and the fund are used in the proper manner for example by banks in connection with the reserves which they must carry against their liabilities. For instance, the Federal Reserve Banks must carry a certain reserve in gold, silver and legal tender as against the notes that they put out, and it would be possible for them to tack that reserve in a satchel and carry it from one place to another. That is a true reserve or fund. But this reserve of which we are speaking is nothing more than a series of accounting entries. They exist only on the books.

Q. More properly it is termed reserve account, isn't it?
A. Reserve account.

Mr. Dotson: But it is actually recovered by the incomes of the company, is it not?
[fol. 8284] The Witness: The charges to expense should operate to retain in the undertaking amounts equivalent to the charges; that is, they prevent corresponding amounts from increasing the income of the company in such a way that they could be disbursed in dividends for example.
Mr. Dotson: They should not be disbursed in dividends, should they?
The Witness: No, sir.
Mr. Kinnison: They can be reinvested by you, though?
The Witness: They are no different than any other funds which the company owns and they are commingled with them and used for any proper corporate purpose.
Mr. Kinnison: It is actual then to the extent that you do use it for extensions.
The Witness: We use our assets for extensions; any funds of which we may be possessed and for which we have no other use we can use our extensions or any other purpose that is proper.
Mr. Kinnison: As a matter of fact you are entitled to show that the money which you used in the extension came from the depreciation reserve account?
The Witness: You can show that they came from depreciation reserve account?
Mr. Kinnison: Do you?
The Witness: No. I think I can clear that up in connection with the other question that Mr. Shuler asked.

Q. The other point which I have in mind is this; is the [fol. 8285] account for depreciation in any respect an account for replacement?
A. No, sir, depreciation expense is the same whether or not there are made replacements; that is to say, if you have an automobile and it is used up in rendering service, that depreciation happens whether or not you buy another automobile. And a great deal of confusion attending the question of depreciation has arisen from the attempt to consider depreciation in connection with replacements. There is *no* absolutely no connection with replacements. It is a question of retaining out of the revenues of the company

or undertaking amounts equivalent to the original cost of property used up in operations.

Q. Without meaning to go over the same ground with each one of your answers, let me ask you whether or not these principles which you have been enunciating here have been arrived at as a part of the study and work of the General Staff?

A. Yes, sir, we have been studying this question ever since I have been in New York. I have been putting in a great deal of my time personally on this question.

Q. Will you explain the fundamentals of a proper method of determining the annual depreciation expense for the Ohio Bell Telephone Company?

Mr. Kinnison: Read that, will you please?

(Question read.)

A. In the first place you must know the amount of the property that is to — depreciated. In the next place you must estimate the average service life in years. In the third [fol. 8286] place you must estimate the net salvage which will be realized upon the retirement of the property. Having those factors, it is a simple mathematical calculation for the accountant to determine the depreciation rate.

Q. Have you a chart on that subject or is that covered by one of your previous charts?

A. That is shown on Exhibit No. 12.

Q. And you have no original chart on that subject?

A. No, sir.

Q. I think you have already made it clear that the figures in that chart are hypothetical only.

Mr. Shuler: Right.

The Witness: Yes, illustrative.

Q. I think you have also explained that the real rates of depreciation are the component rates for the various classes of plant and not the composite rate for all, which is the product of the component rates?

A. I have.

Q. You have already covered that?

A. Yes, sir.

Mr. Dotson: How do you estimate this service life? Is that based upon actual experience or otherwise?

The Witness: The uniform system of accounts requires that the depreciation rate shall be based upon the com-

pany's history and experience, and it places upon the proper officials of the company the duty of giving correct estimates of such life, which they must be prepared to support by sworn statements if the Interstate Commerce Commission so desires. It is necessary for the engineer or whoever is [fol. 8287] given this responsibility to study carefully the life of telephone property, obtaining all the information that he can regarding the past life and past salvage. And he must also carefully consider the changes in the kind of plant and changes in the art and the prospective future developments which will affect the life of property, so as to obtain a fair and reasonable estimate of the present and future depreciation rate. That is the responsibility placed upon him by the Federal Law and that is the manner in which it is done. I think this is an appropriate place for me to answer your question, Mr. Dotson. You said, I believe, "What would you do with reference to a structure of relatively long life, of which in the beginning it was possible to make only a rough estimate?"

Mr. Dotson: An estimated period. That is, you had an estimated period?

The Witness: Yes, sir. In a case of that kind it would be necessary to make the best estimate that you could make. It would have to be made by somebody who was familiar with that property, usually the engineer, and that rate would be used until as the life of the item progressed you got a little better picture of what its ultimate life was going to be, and then you would modify your depreciation rate so far as necessary to continue to spread as evenly as possible throughout the life of the property the cost of the capital which was being consumed in operations. The nearer you came down to the end of the life the better view you would [fol. 8288] have of the remaining portion, and it would be the duty of the engineer to adjust that from time to time. Upon the face of the proposition it is not a matter about which you can have certainty. It looks into the future and everyone must frankly admit that there is an element of estimate in it, and that element of estimate becomes more prominent in proportion as the life of the property is very long and the future salvage level is unknown.

Q. Now, right there, that estimate you are talking about is based upon property as a class and not individual items of that *l*class of property; isn't that true?

A. Yes, sir, almost invariably one item is offset against another, so that if you over estimate on one there is quite a possibility of your under estimating on another, just as it is possible for an actuary to tell when any individual is going to die; he may form a very close approximation as to the average length of life of a large group of individuals of that class. So with telephone property. When you have a large number of units your estimate is going to be more nearly accurate, and there is always that duty upon the responsible official of keeping close watch of this situation, and using from year to year the proper depreciation rate which he can substantiate before the Federal authorities. This expense is a definite certain expense of operation, and therefore, it must be accounted for, and in the absence of actual information under the exact amount of the expense, it must be accounted for as well as the circumstances per- [fol. 8289] mit. It is like a great many other questions that come up in the operation of any big business, whether it be public utility or any other; that is to say the problem of determining correct depreciation rates is no greater than many hundreds, I might say, of business problems which are daily coped with by responsible business men. It is no greater than the problem which the Ohio Bell Company is today involved in determining the most efficient operating methods for use in the present and in the future and in selecting proper types of plant for use in the future and other questions of great moment of that character.

Q. When you say that the average life of a certain kind of plant is ten years, that does not mean, does it, that all of the items live ten years?

A. No, sir, that is the object of bringing in tables A and B, Exhibit 13 and the accompanying charts of 14.

Q. Nor does it mean you go on making the entries for depreciation expense in the same monthly amounts for ten years?

A. No, we do not. There seems to be an idea I run across it from time to time—that we have certain property which is going to have an average life of ten year- so we set up some kind of a prepaid record, we divide the consumable outlay by ten, and then above one tenth into each of ten succeeding years. That is not the idea at all. The idea as expressed in these charts is that when the method used by these charts and tables is applied, it results in charging it [fol. 8290] with only the proper cost of the using up of the

property, which is giving service in that year. For instance, referring for a moment to table B of Exhibit 13, so long as a thousand units are in service you — charging depreciation upon a thousand. In the last year when five of those units remain in service you are charging depreciation only upon five.

Q. And if your plant grows you have a charge on a greater number?

A. Yes, sir.

Q. Now, one of these charts before us shows certain property which gradually disappears. It isolates, we might say a specimen or kind—specimen of property is better—for examination; but the telephone plant does not disappear; it continues. What is the relation of this chart to the continuing plant?

A. Let us refer to Exhibit 14.

Q. Yes.

A. Chart A. That is not the investment in an entire telephone company that is referred to there. That is the investment in a certain group of telephone property, representing the amount placed in service in the year one. Now, other property has been placed in service in the year two and other property in the year three and in the year four and so on. So that if you were to deal with the total telephone plant of that class, you would not have one curve sloping down like the one on Chart A, but you would have a continuous series of curves, one right after the other, and it is possible by taking a cross section through a continuous series of curves of that kind to obtain a pretty good indication of the average service life of a homogen-ous [fol. 8291] group of property by what is known as the turnover cycle method, because you can see how much property comes out of service between the two dates.

Let me explain that a little further. You would get at any date you made such examination the principal part of the retirements in respect of certain groups. That would be the middle part of the retirements, the part that clusters around the period of greatest mortality. You would also get a certain amount of retirements on plant recently installed, representing the shortest life elements of that group. You would also get a certain number of retirements representing the longest life survivors of some long antecedent group, and by getting that thing properly proportioned, you can get a fair idea of average life. It is not

quite as easy as reading the newspaper, of course, and when you get it you have to use it with judgment, because that at best will only represent what the life has been in the past and that is not your final answer. What you must obtain is the life of the present property, and therefore, you must apply judgment to those results.

Q. In connection with these studies which you have made have you determined whether or not it is proper to take the actual amount of retirements, say over a period of ten years, and ascertain the relation of the amount to the average property in service over this same period, and then use this per cent relation as a basis for annual depreciation charges for retirements for the future.

[fol. 8292] Mr. Kinnison: He is not qualified on that. You are referring to actual displacements?

Mr. Burr: No, not as to amounts.

The Witness: I have a series of Exhibits. When I say series, I think I have a half a dozen. They are all interrelated, and it does not require much explanation to cover that phase of the matter, and several other phases or I can introduce a single Exhibit on that particular subject.

Q. Will you introduce one on that particular subject first and discuss it, following it with the other Exhibits later?

Mr. Kinnison: Is the basis of your Exhibit hypothetical or is it based upon facts?

The Witness: It is based upon the facts, Mr. Kinnison.

Mr. Kinnison: Dollars and cents?

The Witness: It is based upon accounting principles.

Mr. Kinnison: Dollars and cents, retirements of property in actual operation?

The Witness: It has no extended calculations. It represents an idea. It shows what you can and what you cannot do under the uniform system of accounts.

Mr. Burr: It may be marked Crunden's Exhibit No. 15, and is offered in evidence.

And thereupon the paper writing above referred to was marked for the purposes of identification and was offered [fol. 8293] and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Cruden's Exhibit No. 15, and made a part hereof.

Q. Prior to the short recess, Mr. Crunden, you had identified Crunden Exhibit 15, and it had been offered in evidence. Will you explain the chart which represents that Exhibit?

A. This chart makes a contrast between the standard method of accounting, that is, the straight line depreciation, and a plan which has been usually called the retirement theory or retirement method. That is a name which has clung to it, although it is not to be dignified by calling it a method. It is a source of confusion, because the depreciation reserve account is really a liability for retirements account. But there are certain errors in this so-called retirement theory which are very bad indeed, and it is desirable to clear up any confution there may be between the legitimate handling of a depreciation reserve account for the purpose of taking care of your retirements and the erroneous assumptions involved in the improper retirement theory.

The first half of this Exhibit is a simple exposition of the treatment of certain items under the straight line plan. It assumes a growing plant, composed of units costing a thousand dollars per unit, and salvage is assumed to be zero, to simplify the illustration. In the first period of five years, [fol. 8294] it is assumed that one thousand dollar unit has been placed in service. It is used for five years, and upon its wearing out and being retired, there is a loss of a thousand dollars. Manifestly the depreciation expense for this period is a thousand dollars for five years, equal to $200.00 per year, or twenty per cent per annum.

It is then assumed that there is a second period of five years, in which due to the growth of the property, there are two one thousand dollar properties. These are retired in five years and retired with a loss of two thousand dollars. The depreciation expense for this period is similarly calculated in five years, annually $400.00, making the rate twenty per cent per annum, the same as before. We then go on to a third period, in which three units are in service. Here it is estimated that the life is five years and that the loss will be $3,000. So that the proper way of charging up depreciation would be to estimate that the rate of twenty per cent per annum is the proper rate to continue because the loss is now expected to be $600.00 per year on a first cost of $3,000.

Now, in the latter half of the Exhibit it brings out this point, that it is incorrect and contrary to the provisions of the Interstate Commerce Commission system of accounts to divide the amount of the past retirement loss by the amount of any property other than the particular property the retirement of which made the loss. The result of such calculation is meaningless and signifies nothing as to [fol. 8295] the average life of the property or the annual depreciation of the present property. That is then shown by an example. Here in order to bring out the false relationship which is engendered by the so-called retirement theory, the periods are assumed to overlap. This one $1,000 unit is placed in service and before it is worn out and retired two additional $1,000 units are placed in service. The relationship of the retirement loss of $1,000 to the original $1,000 unit is the correct relationship, as in the illustration above. The relationship of the loss of $1,000 in connection with the first unit to the original cost of the two $1,000 units which are in service at the time that the first unit is retired is a false relationship. It is incorrect to relate the loss of $1,000 on the first unit to the cost of $2,000 on the second and third units, or in fact to relate it to any cost other than the cost of the first unit.

Now, that idea is carried across the statement with respect to the second and third units, and in the fourth unit in the fourth period it shows that there may be any part of units placed in service or there may be none at all remaining, but nevertheless, the fourth, fifth and sixth units may be worn out and retired during that period. There are various ways of making calculations under this so-called retirement theory. The basis of them is to take the realized depreciation or the expense on account of completed retirements, that is, the charges against the reserve in the current year or in some other year, and divide them [fol. 8296] by the amount of plant presently in service or by an average of the amount in service over a preceding series of years. Any percentage obtained in that manner, no matter how, is bound to be wrong unless it accidentally coincides with straight line depreciation. That is, if in the process of making such a calculation you should accidently hit upon a combination which represented the retirement loss of certain property and you accidentally used the original cost of that property as your devisor in making

your calculation, you would then be on the straight line basis, that is, you would be on the exact basis shown in example A, and which is illustrated in preceding Exhibits, but the chances of doing that are so exceedingly slim that the worth of this so-called retirement theory in estimating the depreciation rate is pretty nearly zero.

Q. In other words, it is not correct to find the relation of the plant retired to the retirements in the year, to the total plant in the year during which the retirements take place.

A. There is no connection between the two things because the retirements represent the loss on property which has already gone out of service. The present plant account represents property which has not gone out of service and which may be an entirely different plant. In other words, if you had a Ford automobile and in this present year of grace 1924 it was retired from service at a loss to you of $300.00, whether or not you might have a Dodge or a Cadillac to replace that, would have nothing to do with it, and if [fol. 8297] you divided the cost of the Dodge or the Cadillac into the retirement of the Ford car it would get you no where.

Q. Have you, Mr. Crunden, some charts in which you have applied this straight line principle to an assumed taxicab business in a similar way?

A. Yes, sir, I have an- I think that they are very good charts to shed light on this whole question.

Mr. Dotson: Speaking of the illustration you gave of the Ford automobile and the probable Dodge or Cadillac succeeding it, the only thing that you would carry into the depreciation account on that Ford account would be the original cost, would it not?

The Witness: In the illustration that I gave, the error consists in arriving at the depreciation percentage by using as the devisor something other than the cost of the Ford car. If you should use the cost of the Ford car in arriving at that result, your answer would be correct as to what depreciation you have had in the past, and then with that in hand you go forward and estimate what it would be in the future.

Mr. Dotson: But then the rate of depreciation that you do apply seeks to only retire the original cost in the end in any event?

The Witness: Yes.

Mr. Dotson: And that is all that would be retired?

The witness: Yes, that is all. There is a chance there for people becoming confused, because there is a legitimate [fol. 8298] retirement method, which is the straight line depreciation method, and then there is this erroneous and improper method which is confused with it, because it is a rather difficult subject to see clearly, unless you are working on it or unless you are an accountant.

Mr. Dotson: That is due to the fact that you take into consideration just the specific property which may be related up to other properties employed in the same business in which the depreciation fund accrues, or on which the depreciation fund accrues, for you are dealing with it as a property as a whole and not in each property in a specific way?

The Witness: You are dealing with each class of property. That is right, and if the class of property remains the same——

Q. Whatever your unit is, whether it is a class or whether it is an entire equipment, it does not matter; whichever unit you adopt the rate that relates to each particular specific item is the rate that applies to the unit.

The Witness: That is correct, yes.

Q. But you cannot get the proper rate by applying the value of the Ford car or the cost of the Ford car to the value of the Cadillac which is in service, can you?

A. No. The calculation to be made properly must take the salvage on the given property, subtract it from the original cost of the same property and divide it by the number of years that that property was in service to ob- [fol. 8299] tain the depreciation rate.

Mr. Dotson: Now, in this connection should the accrued book depreciation then equal the observed or appraised depreciation.

The Witness: No, not necessarily.

Mr. Dotson: Why not?

The Witness: It might by accident, but the chances are it would not. Well, the depreciation of the engineer which he uses in arriving at the condition of property has reference to the specific condition of the property as it exists from time to time. The depreciation of the accountant,

and perhaps it ought not to be called depreciation at all, but ought to be called the charging off of retirement expense, had to do with a bookkeeping procedure for a spreading of the expense of property used up in operations in a most equitable way to successive accounting periods. Now, there are two distinct things there and it is obvious that they could not be identical, because their aims are different. When the engineer is dealing with property the question before him is, what is the condition of this property?'' And he had to be familiar with the property and ascertain its condition in point of fact. But the engineer adopts a rigid mathematical accounting procedure for charging up depreciation expense, and he does it in a manner which is good accounting procedure and equitable from the Public Utilities standpoint, because nothing could be more equitable.

Q. You said the engineer did that. You mean the ac- [fol. 8300] countant?

A. I mean the accountant. You will have to pardon me and watch me I guess. Nothing could be more equitable if a pole line is in use for ten years and then retired from service and its cost lost than to apportion its cost in equal installments over the service life. There is no good reason why more should be charged in the beginning and less at the end and no good reason why less should be charged in the beginning and more at the end. All of the traffic over that line should bear its pro rata portion of the capital used up in maintaining the line.

Mr. Dotson: Is the engineer's depreciation based upon physical depreciation or functional depreciation?

The Witness: It is based on both so far as they exist. If the engineer goes out and examines the property and finds there is manifest physical deterioration, it lessens the value of that property and he should take it into account. Similarly if there is manifest functional depreciation that has a bearing on the value and it should be taken into account. Of course, the engineer cannot find in depreciation which shows no obsolescence or inadequacy any such factor. The accountant in dealing with classes of property as a whole, if he knows that there is a certain amount of obsolescence and inadequacy which has been met with in the past and is going to be met with in the future, as a regular part of the operations of the business, he will naturally require the engineer to estimate on that as one of the factors

that tends to shorten the life of the property, and that will [fol. 8301] all be rolled into the general average which is used in determining the average service life.

Mr. Dotson: Then the engineer's estimated life of the property is not the basis of your depreciation retirement; it is that of the accountant rather than the engineer; isn't that true?

Mr. Burr: Mr. Dotson, will you ask the question in this way so as to make it a little clearer? Does the engineer's estimate at any particular time as to the condition of the property bring about what you are trying to get?

Mr. Dotson: Put that down and I will see what I get.

The Witness: I don't get the question now between the two of you.

(Both questions read.)

The Witness: I am not entirely clear as to what the question is, but I will answer it. It can be hardly expected that a purely mathematical basis of charging depreciation expense in the accounts would coincide with the change in the observable value of property as it might exist from time to time in actual fact. As I have previously stated I do not think there is any connection between the two things. The two depreciations do harmonize at two points. One is when the property is new and you are just about to get ready to make the first entry. You have nothing on your books and you have a 100 per cent condition in your property. It harmonizes again at the moment of retirement, because then the accountant has accrued on the books [fol. 8302] the amount of the loss and the engineer finds the property in zero condition plus any salvage. But in the change in between there is no connection between the two things that I can see.

Mr. Dotson: Is there an actual study and survey made by the engineer—that is, this part of the work—or by the accountant as to the functional life of a class of property that is in use in order to determine whether the life of that property will correspond to the estimated period or will exceed it or be less than that.

The Witness: Such a study is necessary on the part of the engineer in arriving at the life for use in determining depreciation rates, yes, sir.

Mr. Dotson: My question is do they actually do it?

The Witness: Do they actually?
Mr. Dotson: Yes.
The Witness: Oh, yes.

Q. And that is entirely different from the per cent which the engineer makes in order to determine the per cent condition of the property at any particular time?

A. Yes, it is quite likely to be. Going back to life insurance for an illustration——

Mr. Dotson: Well, then, with all the experience that the company has had in dealing with the life of different classes of property and equipment, it has not yet learned to know just what the real average life of any class of property may be; it still requires this different study and survey to be made from time to time of different classes of property to [fol. 8303] determine what the actual life will be for the purpose of carrying out your depreciation reserve in accordance with the actual life.

The Witness: Yes, and that will always be the case, Mr. Dotson, because we cannot look forward to a time when the plant will get into such a state that it remains the same and the accidents and causes that terminate its life remains the same forever. A telephone plant is changing all the time and you have to take that into account when you arrive at a depreciation rate to be given to the accountant to charge up the proper amount of depreciation expense in any year.

Mr. Dotson: Well, you do have an average life period for each class of property?

The Witness: Yes, sir.

Mr. Dotson: It has been worked out from your experience.

The Witness: Yes, sir, by the engineers.

Mr. Dotson: Are we to understand, however, that that is not yet accurate enough in order that you can rely upon it in dealing with your depreciation retirements?

The Witness: Oh, yes, it is accurate enough to rely upon it for that, and we do rely upon it and we make it the basis of our sworn annual reports to the Interstate Commerce Commission. I do not know what I have said that would give you the impression that we do not rely upon it or we do not have such records unless it is that I mentioned that [fol. 8304] there would always be an element of estimate in it.

Mr. Dotson: That is exactly what I had in mind.

The Witness: Yes, it is obvious that as to that extending into the future there is always an element of estimate.

Mr. Kinnison: You used the words, "True depreciation" in one of your answers recently. Is it the theory of the true depreciation that you seek to amortize the loss of your original investment?

The Witness: Yes.

Mr. Shuler: It is a trust fund, isn't it, for the rate payers; colloquially speaking, it is called a trust fund for the rate payers?

The Witness: No, I don't think it is called that at all. In the first place it is not a fund and in the second place there is no trust.

Mr. Shuler: You said awhile ago it could not be paid out in dividends. I do not mean it is a trust. But they are sort of trustees for the public. It is not a legal trust, of course, not.

Commissioner Poor: Mr. Crunden, will either one of these methods you have outlined here on your Exhibits depreciation methods, provide a fund that will replace the Ford car with the Cadillac car?

The Witness: No, sir.

Commissioner Poor: Each one will provide a fund that will replace the Ford car with a Ford car?

The Witness: Providing that replacement is necessary.

[fol. 8305] Commissioner Poor: Yes, at the worn out period of the Ford car.

The Witness: Yes, example A will do that on Exhibit 15.

Mr. Shuler: As a matter of fact it will do more than that, won't it? It will more than do it?

The Witness: No, sir.

Mr. Shuler: That is on the hypothesis that there are no earnings for the accrued reserve as it goes from year to year.

The Witness: There are no earnings for the reserve because the reserve is an entry written with ink, on a book.

Mr. Shuler: Isn't it actually more than that?

The Witness: No.

Commissioner Poor: Just a minute. In your answer to my question you said example A on Exhibit 15 will provide a fund to replace the Ford car with a Ford car when the Ford car is worn out.

The Witness: I mean, Mr. Commissioner, that entries made on that basis will operate to retain in the undertaking amounts equivalent to the original cost of the Ford car as used up.

Commissioner Poor: Isn't that what you seek to do?

The Witness: Yes, sir, but the second Ford car might have a first cost different from the first Ford car, and in that event you would pay less or more for that second Ford [fol. 8306] car. In other words, this is not a proposition of replacement at all, but straight line depreciation which is retained in the business out of the revenue of the company, an amount equal to the loss on the original property that is retired. Now, if you take from the company's current funds certain monies and say for the sake of illustration, although, of course, you cannot earmark dollars, that this thousand dollars you assume to be the same thousand dollars of depreciation expense, then if the present price of the Ford car is a thousand dollars, you can substitute the second Ford car for the first Ford car in the manner I thought your question anticipated. But this is what I am getting at. If the Ford car has gone down to $800.00 the situation is changed. If it has gone up to $1200.00 it has changed. Depreciation has nothing to do with replacement.

Mr. Laylin: Isn't it a matter of capital replenishment or replacement?

The Witness: Yes, exactly. It is a question of—as a dollar is used up in rendering telephone service another dollar is retained in the undertaking to replace it over the life of any item of property.

Mr. Shuler: That is the straight line idea.

The Witness: The straight line idea is that between the time of the installation of a unit of plant and its retirement a certain cost of property is used up. Now, the object of the depreciation charges is to earmark as an expense, to earmark for expense and to prevent the net income of the [fol. 8307] company from being overstated.

Mr. Shuler: Now, supposing it happens that at the end of the replacement period the Ford car is $800.00 instead of a thousand. Then what happens as a matter of bookkeeping?

The Witness: You mean that the first Ford car costs a thousand dollars and the second one costs $800.00.

Mr. Shuler: Yes, sir.

The Witness: Why you take any funds that you have if you have any and go out and buy a Ford car.

Mr. Shuler: What happens to the bookkeeping proposition?

The Witness: On the original Ford car?

Mr. Kinnison: Now about that $200.00. Where does it go in your books? It would stay in the depreciation reserve, wouldn't it?

The Witness: No, sir.

Mr. Shuler: Where would it go?

The Witness: No, sir, for this reason. The original Ford car costs a thousand dollars and it stands debited to the plant account that much. The depreciation reserve by reason of charges to expense aggregating $1000.00 and credited with that sum. When you write off of plant account against the reserve account in the sum of $1000.00 you cancel both.

Mr. Shuler: It only costs you $800.00 to replace it?

The Witness: Replacement has nothing to do with it.

Mr. Shuler: You knock off a thousand dollars although [fol. 8308] it only cost you $800.00?

The Witness: Yes, we knock off a thousand dollars off of the plant account and the next day you go out and buy one at $800.00. Then you put that in at $800.00 and that account which stood yesterday at 1,000 stands today at 800.

Mr. Shuler: Where does the 200 go or where does the 200 show up?

The Witness: It shows up in whatever other assets the company might have.

Mr. Maltby: Your application of the straight line method then would not affect the capital account?

The Witness: On replacements?

Mr. Maltby: No, in any shape; the capital account would not be materially affected.

Mr. Burr: It would not be reduced.

Mr. Maltby: It would not be reduced by your application of the straight line method.

The Witness: No, sir, if I understand your question there is no connection there.

Q. In Mr. Shuler's example your capital account would have a Ford car at $800.00 and you would have $200.00 in some other form of investment, would you not?

A. Yes, sir, you would have it, in working capital.

Q. And that is what you had to start with, $800.00 plus $200.00 or a thousand dollars?

A. Yes, sir.

Mr. Shuler: That is right. Now, I want the converse [fol. 8309] of it. If he pays $200.00 more or $1200.00 that has to come out of something else?

The Witness: Yes, he must get other capital to meet that.

Q. In your bookkeeping you say that you apply the per cent of depreciation against the book figures; that is correct, isn't it?

A. Yes, sir.

Q. In estimating the reproduction cost or value of a property, what have you to say as to the correctness of applying the per cent of depreciation or the rate of depreciation to the reproduction cost?

A. You mean as a legal proposition, the propriety of it?

Q. Well, as a rate making proposition in connection with a rate case?

A. I should say the accounting relation to that was about this way, that the accountant necessarily keeps his books on the basis of cost, and everything on the books is on the basis of cost, whether it is plant or whether it is money or whether it is accounts receivable, and if he is going to show costs all the way through he must show depreciation on a cost basis.

Q. Right.

A. Now, whether you are going to use that method in a rate case is a legal question, that is, I do not feel competent to pass on it.

Q. The two are quite separate, aren't they?

A. Yes, in other words, one is purely an accounting question and the other one is not an accounting question. I presume it is a legal question. I don't know.

[fol. 8310] Mr. Shuler: Isn't it a question to get the most money?

The Witness: No, that would not be right. The thing might cut both ways. The question is what is a correct principle?

Mr. Kinnison: That first theory is the true theory of depreciation?

The Witness: Yes, sir, it is the correct accounting theory.

Mr. Shuler: If that is true, what is the value of all your accounting to the associated Bell companies, if it is not to be used in rate cases? How is it of value to the associated Bell companies?

The Witness: I do not see that the accounting is primarily for use in rate cases. I think the accounting is primarily for general purposes, and we have to keep books on the basis of accounts. Now, if the lawyers get into this proposition and decide they cannot use the books in finding fair values, but some other thing, I do not think the accountant can follow into that. That is their specialty.

Mr. Shuler: Who furnishes the Bell Company its accounting system and method so as to be able to present its cases for rate making purposes?

Mr. Burr: Are you talking now entirely to the point of depreciation?

Mr. Shuler: No, I am talking to the point that he says [fol. 8311] the General Staff is of great value to the associated Bell companies, and to demonstrate that he has gone on here for several hours to show this wonderful accounting system which they have devised, which — inestimable value to the associated companies.

Mr. Burr: Right.

Mr. Shuler: Now, he says it has no value to them at all for rate making purposes. Now, I ask him who gets up the accounting system for the Ohio Bell Company for the purpose of its rate making cases.

The Witness: Answering that question, I would like first to call your attention to the fact that I did not say they system was no good for purposes of rate cases. In answering the question I would like to say that the accounting system is of great value for rate making purposes and is the thing on which you should rely in rate making as to all matters affecting cost.

Mr. Shuler: I think we all agree to that, but your attorneys do not.

The Witness: I do not get the point exactly. If you will state to me what the difficulty is perhaps I can clear it up. I am trying to keep to the accounting which I understand and not get into some apparent legal difficulty about which I am not clear.

Mr. Shuler: Who sets up for the Bell Company the

theory of depreciation of reproduction cost rather than original cost?

[fol. 8312] Mr. Burr: Now, you are talking about rate cases?

Mr. Shuler: Is that part of your work on the General Staff?

The Witness: I do not think it is the work of the General Staff at all.

Mr. Shuler: I understood you to differentiate between the true accountant's theory of depreciation upon original cost and the theory that has been advanced in this case upon replacement.

The Witness: I did.

Mr. Shuler: Who supplies the system of accounts for the latter?

The Witness: There is no system of accounts for the latter, because as I say that is not an accounting question. To illustrate it in another way, without being a lawyer, I have had it *b*inned into me for a long time that the Supreme Court says that the utilities are entitled to a fair return upon the fair value of the property. They do not say you are entitled to a return on the cost of the property. I do not say yet what we have on our books is not the final criterion of the amount to which the fair return is to be applied. It may be the same as depreciation. I do not like to discuss it, because I am not a lawyer.

Mr. Shuler: But your method is the proper method of depreciation to keep the investment intact, is it not?

The Witness: Yes, sir. By investment I assume you mean there the book cost of the property?

[fol. 8313] Mr. Shuler: Right.

The Witness: Oh, yes, that is perfectly straight.

Commissioner Poor: But your method does not make any difference whether you start out with either reproduction value or cost value. Say your cost value is a thousand dollars and your reproduction value is $2000.00. Your aim is in one case to a fund of one thousand at the end and in the other case 2000 and your method would apply equally well in both cases irrespective of what you started out with?

The Witness: It would, Mr. Commissioner.

By Mr. Burr:

Q. So far as the method is concerned it is precisely the same, isn't it?

A. Yes, sir.

Com. Maullar: Mr. Crunden, just one little application of your depreciation theory. Suppose a pole line—we talk of poles because that is a familiar piece of telephone apparatus with which we are all acquainted—say a pole line known to be in the ground or having been established in position for ten years is appraised by an engineer and its per cent condition given as 90. Now, in applying your depreciation theory would you apply the straight line depreciation as applicable to that class of property the country over or to that specific property?

The Witness: Would you mind elaborating on that, Mr. Commissioner. I do not get your point yet.

Commissioner Maullar: You know in these rate cases we have what they call observed depreciation?

The Witness: Yes, sir.

[fol. 8314] Commissioner Maullar: They go out and appraise a line of poles that are known to have been in place for ten years.

The Witness: All of them?

Commissioner Maullar: Possibly such a line could be picked out.

The Witness: All right, we will assume it has been there for ten years, everyone of them.

Commissioner Maullar: Yes. Now, in the appraisal of that or in the application of your straight line depreciation would you apply it to the observed value of that line or to the straight line of that class of property the country over.

The Witness: You mean in arriving at the condition of the property?

Commissioner Maullar: No, in arriving at the value of that property, at the present value of that property.

The Witness: I am afraid that is an engineering question that I would not be competent to answer. To tell you the truth, I am not entirely clear about it, and it is outside the scope of my work.

By Mr. Burr:

Q. These charts——

A. May I interject a thought in there?

Q. Yes.

A. Is it this point you have in mind, Mr. Commissioner, that the accountant on the books may have charged up a

depreciation expense in several successive periods and the amount he may have charged up in say one third of the cost [fol. 8315] of the property, and when you go out and look at this piece of property to which the charges relate, its condition is better than 33⅓ per cent; is that the point involved?

Commissioner Maullar: Yes.

The Witness: That is what I was trying to discuss when I said that I think the depreciation affecting the physical property itself has its own characteristic curve, and the straight line procedure of the accountant is simply to draw a line from original cost down to salvage value by means of a straight line, such as you might make with a ruler, like the Czar of Russia made the railroad between Moscow and St. Petersburg. He drew a line with a pencil. He paid no attention to geographical conditions. That is what we do. We try to put in our amounts of depreciation in the several successive depreciation periods in which the property is in use and we do not try to make it conform to the actual condition of the property as it exists. The first and biggest reason for that—and there are two reasons—is that it is equitable to charge the depreciation expense in that way. There is no good reason anybody has ever brought forward against that method of conducting the accounting, and it has been the method that the Interstate Commerce Commission people have adhered to steadily since the first time they tackled this proposition. Now, the second reason is that the accountant could not be reasonably asked to find the condition of all the multitudinous [fol. 8316] articles in a telephone plant every year and make entries on his books. No person could do that without inventories and appraisals which are expensive. I don't know whether that covers the point.

Mr. Shuler: You do recognize observed depreciation as well as straight line depreciation?

The Witness: Yes, I recognize engineering depreciation, and I think that there we are talking about true depreciation, the way the word should be used, that is, as a lessening in value. But when you talk about depreciation in the accounting you are talking about the best method of writing off an operating expense.

Mr. Shuler: In a certain class of property?

The Witness: Yes.

Mr. Shuler: Mr. Crunden, may I——

The Witness: Just one more thought comes in.

Mr. Shuler: Oh, certainly go ahead.

The Witness: I think we should not be confused as to the relative importance of different things there. The fundamental fact is the property itself. It is for the sake of the property that the accounting exists and not the other way around, so that the prime side of this question is the property side, the engineering side and the Commissions and Courts have determined or are trying to determine the proper way of setting up the value of that property. Now, that is the controlling thing. Then comes the question of expense, and the depreciation expense is now being handled [fol. 8317] on this straight line basis, and it is a simple workable basis, it is equitable and should be continued and if there is any way that it can be changed that would fit in any better with the requirements connected with the property, it should be changed. But it cannot be changed because there is no better method.

Q. Mr. Crunden, in a growing telephone plant such as that of the Ohio Bell Telephone Company in Ohio, can you obtain the proper rate of depreciation by finding the relation of the retirement to the cost of plant in the year the plant was retired, or on the contrary should you not find the relation of the retirements to the cost of plant in the year when the plant which is retired, for example, was installed?

A. The latter method is unquestionably the correct method and the only correct method and the first mentioned method is erroneous and has no standing whatsoever.

Mr. Shuler: As I understand you, that is what your method does, doesn't it?

The Witness: No, sir.

Mr. Shuler: Didn't you tell me that when the automobile was retired at $1200.00 you took $200.00 more from capital, original capital and put it up into plant?

The Witness: Well, that is a different subject. I think if you would read that question and answer you would find that that was a different phase of the matter.

Mr. Shuler: I think we absolutely agree. I may not [fol. 8318] have made my question clear to you.

The Witness: Oh, I think that we are together about that

$200.00, yes, but I do not see how it ties in with Mr. Burr's question and my reply.

Mr. Kinnison: Mr. Witness, while ago you told me that the matter of putting aside an annual depreciation reserve was simply an entry?

The Witness: Yes, sir.

Mr. Kinnison: You mean to say actually the funds are not somewhere within the corporation for present or later investment?

The Witness: I mean that there is no dollars connected with the entry otherwise than in the sense that dollars are connected with any entry. That is to say, there is no fund, there is no tagging of dollars, no ear marking of dollars, but the charge to expense does operate to retain in the business of the company's revenues amounts equivalent to the charges certainly.

Mr. Kinnison: Then when you have completely amortized your depreciation on the automobile of a thousand dollars and you want to buy a new automobile for a thousand dollars where do you get that money?

The Witness: In order to make that a practical illustration, we will have to think of the Ohio Bell Company as a growing plant. Then we make depreciation charges in 1923 and as a result of that certain monies representing those credits are retained in the business. They cannot go [fol. 8319] through into surplus. Now, in the growing plant it is the desirable thing to use such working capital as you can spare to build additional property before you go out into the market to borrow additional money on securities or otherwise, so that we invest our working capital in plant just as fast as it accumulates. So new property tends to take the place of old property. Now, at a later date it is from that that this property is retired from service, and because it is a continuing business, other property must take its place. At that time we have made various expenditures for property previous to that time and we are able to go to the Commission and show that we have invested out of our own monies considerable sums——

Mr. Shuler: A part of it is depreciation reserve.

The Witness: A part of it is the money retained in the undertaking by reason of the depreciation charges, and we can then show that those expenditures have been made, and obtain permission to issue additional stocks and bonds.

Q. You earn on it, do you from the very time you begin to retire into the depreciation reserve, that is, it is set up in your capital account and reinvested for the business of the company in additions and betterments; it is available there for that purpose, isn't it?

The Witness: I didn't get your question.

(Question read.)

Mr. Shuler: Take your theory of a growing business, that all the money retained is retained for the purposes [fol. 8320] of the company.

The Witness: Yes, sir.

Mr. Shuler: And you invest it in the company itself?

The Witness: Yes, sir.

Mr. Shuler: And set it up as property which should earn?

The Witness: If it is invested in additional telephone property it should earn, yes, now, of course, coincidentally with that there is this condition. Here is property on one side of the street, we will say which represents the original property, and that property is depreciated. We have to make charges to expense on account of that property. We then find ourselves in possession of some additional working capital, assuming that the revenue has been sufficient to provide such capital. Now, we may take those monies and invest them on the other side of the street and give service to additional subscribers. When we come down at a later date to issuing some more securities or some more capital stock, it is immaterial whether the property is on one side of the street or the other so far as the issuance of those securities is concerend, so long as there is that additional property somewhere. While that is going on, we are not entitled to earn a return upon more than the fair value of the property in its depreciated condition both on the one side of the street and on the other. Does that answer the question of the A. T. & T. or the Bell Companies?

Mr. Shuler: I understand that answer.

[fol. 8321] The Witness: Yes.

Mr. Shuler: For how long has that been the policy of the A. T. & T. or the Bell Companies?

The Witness: Why I think that has always been the policy.

Mr. Shuler: You have been with them since 1910?

The Witness: Yes, sir.

Mr. Shuler: Aren't you familiar with Mr. Theodore Vail's

statement in the annual report of 1913, where he says that depreciation reserve is invested in extensions and therefore the subscribers get the benefit of it without any cost.

The Witness: Yes, I remember that and——

Mr. Shuler: Well, doesn't that——

Mr. Burr: Let him finish.

The Witness: I did. I say, "Yes, I remember that."

Mr. Shuler: You have just now said that what they do is, as this depreciation reserve grows and they invested in additional extensions, that you then go and have additional stock issued on it. Now, I ask you when this latter method was adopted.

The Witness: There isn't any conflict between those two things, and there is no latter method adopted. Mr. Vail as financial man talking to financial people and he phrased the thing in his own language. I am talking here about a sort of hybrid question of original cost and fair value which you gentlemen are trying to ventilate. It has been the general policy of the Bell system if we had our rates sufficient to take [fol. 8322] care of all our stock dividends and interest on bonds and advances and provide a reasonable margin for surplus, that we would not go out after increased rates even though we were not getting a full return to which we might be entitled, and that is Mr. Vail's point of view. When we get into a proceeding before the Commission and in the court and where we won't receive any consideration from the Supreme Court unless we adhere to those legal lines they have laid down, it is necessary to make proof on the basis of the value of the property, it is put in on that basis, but there is no conflict between the two. If we receive a fair return upon the fair value of the property, it ought to enable us to pay our interest and a fair dividend and set aside a reasonable margin or surplus to take care of those risks and contingencies that are over and above those you meet with in the operating expenses.

Mr. Shuler: But should it also be a sufficient rate to enable you to create a depreciation reserve upon which you could later issue stock dividends?

Mr. Burr: We do not issue stock dividends?

Mr. Shuler: That is what he said.

The Witness: Oh, no, no; that is something that is forbidden.

Mr. Kinnison: You mean to set it up as a capital asset upon which you can base the sale of stock, is that it?

Mr. Shuler: He said stock dividends.

[fol. 8323] The Witness: All I mean is this; that is certain property that is covered by the initial securities let us say; now that property is deteriorating, depreciating if you like to call it so. As your depreciation progresses it places a limit upon the fair value of the property. Now, we are not entitled to earn upon more than the fair value of the property as it exists from time to time in its depreciated condition. At the same time that the actual physical deterioration is under way we are making entries upon our books upon a straight line basis, amortizing, so to speak, to use the chairman's term, the original cost of that property. That retains in the business working capital. We invest that working capital in additional property from time to time. It is our money. We build property with it and the property is our property. It immediately is placed in public utility service. It is subject to the same fair value rule as the original property, and we are entitled to a fair return only upon the original value of it. Now, the depreciated value of the original property and of the property constructed from time to time out of the company's working capital represents our assets. That is what we earn on. And then we have to turn around and face in the other direction and meet the investors in the business and pay them out of that fair return the necessary dividends and interest to satisfy them and to keep up the flow of new money into the business for extensions and additions.

Mr. Laylin: Assuming a certain amount of capital to [fol. 8324] start with, then when you have established this depreciation reserve and have reinvested that in extensions and betterments of the property, then the depreciated value of those extensions and betterments, plus the depreciated value of your original capital investment in plant, should equal only the original cost, should it not, of the property?

The Witness: No, sir.

Mr. Laylin: Why not?

The Witness: That looks like a fine proposition at first blush, but when you dig into it you find it is not so good.

Mr. Shuler: For whom?

The Witness: As an economic proposition, I mean. The question is whether you are going to make the primse side of this question the property side or whether you are going to make the accounting rule swing the whole thing. It is a fact, and I have so stated it that the decline in value of prop-

erty due to observed deterioration does not coincide with the progress of straight line depreciation. Now, here comes along a proposition which Mr. Laylin mentioned. It assumes to make the two things coincide and it does so apparently by the very violent method of chan-ing the fair value of the property to conform to a mathematical accounting procedure. Now, without becoming too much of a lawyer again it seems to me evident in deciding that the corporations are entitled to a fair return on a fair value of their property, the Supreme Court must have been moved by the [fol. 8325] fact that it is that fair value which then and there exists in point of present economic fact. As I said before I think the property is your prime side of this thing and the accounting merely exists for the sake of the property. Here comes this proposition which seeks to harmonize the two things by setting aside the actual facts, the legal facts, and making the whole proposition conform to what you find on the books. Now, it is notorious, everybody knows it, that the accounting for depreciation has been neglected by corporations in the past. Generally, by the Bell system companies depreciation accounting has been good, but generally by Public Utilities Companies it has not been good. Some companies have the proper reserves, others have small reserves, others have none at all. Undoubtedly the reserve could only be deducted from the full amount of the property, which is what this gentleman's proposition amounts to, providing it had been earned; but who shall say whether or not the reserve has been earned when the facts are usually in dispute? In other words, your proposition raises more difficulties than it disposes of. It gets away from a reasonable basis for fair value on the economic side and it does not have any offsetting advantage.

Mr. Laylin: Shouldn't the only variable be in the value of the property from year to year, the appreciation?

The Witness: It might be a decreased value.

Mr. Laylin: Shouldn't that be the only variable there, answering that question? Otherwise, shouldn't they coinside? [fol. 8326] The Witness: No, because there are influences at work on property besides depreciation. You must remember there that there is depreciation in the economic sense as well as the engineering and the accounting sense. When you say, for instance, that a certain thing is appreciable, as for instance, commodities have been appreciating since the war and money has been depreciating, there you

are talking about a very different kind of appreciation than in these other subjects. When there is too much money or when there is a great increase in money without, of course, their necessarily being too much, when there is more money let me say relative to commodities than there was before, it tends to depreciate money, because there is a great supply of money compared with the same amount of commodities, and when that happens the holder of commodities are more fortunate than the holders of money. On the other hand, if large stocks of money are withdrawn, and the amount of commodities remains the same, then the holders of money would be more fortunate than the holders of commodities. Those influences are at work on the fair value of the property all the time, and they have absolutely nothing to do with the bookkeeping or the depreciation.

Mr. Dotson: I find myself in a predicament with reference to the further hearing here that may make it impossible for me to be present. I may see my way clear to be here tomorrow morning. I am going to do some telephoning if the company will permit me to see if I cannot extricate my- [fol. 8327] self from engagements so as to be here tomorrow. If not, I was desiring to know if possible we could at this time fix the date for the next hearing on this matter. It occurred to me it might be possible to do that. How many witnesses will you have?

Mr. Burr: Three or four. The Commission at the previous hearing in this case set aside the week of March 24th for further proceeding, so that the matter is already taken care of.

Mr. Dotson: All right.

Commissioner Poor: That week was set, not for cross examination of these witnesses produced at this hearing. That was for the further hearing in the toll case.

Mr. Burr: We are in the toll case now.

Commissioner Poor: I know but it was not necessarily set aside for the cross examination of these witnesses.

Mr. Dotson: Do you think that the cross examination would come prior to the week of the 24th?

Commissioner Poor: I think, Mr. Dotson, we had better wait until the conclusion of this session of the hearing to set that date, and we will be sure to notify you as to whatever date is set.

Mr. Burr: My own notion that we might be able to suit all of these gentlemen here, and the Commission would not

have to have the witnesses who have been testifying this week back here on that date, but whatever is satisfactory to the Commission is satisfactory to us.

[fol. 8328] And thereupon the further hearing of this matter was adjourned to Friday Morning, February 29, 1924.

[fol. 8329] Friday Morning Session

February 29th, 1924.

And also C. S. Eaton, called as a witness on behalf of The Ohio Bell Telephone Company, being first duly sworn, testifies as follows:

Examined by Mr. Burr:

Mr. Burr: In explaining why I am calling Mr. Eaton at this time, counsel will recall Mr. Crunden was on the stand when the session closed yesterday afternoon and that he was not excused from further testifying. We expect to call him later on in the day, but inasmuch as Mr. Eaton is here from a distance and would like to get away as soon as possible, I ask your indulgence in the matter of interrupting Mr. Crunden's testimony and calling Mr. Eaton at this time.

If there is no objection I will proceed with the examination.

Q. Will you please state your name?
A. C. S. Eaton.
Q. Where do you live, Mr. Eaton?
A. Cleveland.
Q. What is your age?
A. 40.
Q. How long have you lived in Cleveland?
A. 18 years.
Q. What is your occupation at the present time?

[fol. 8330] A. I am a member of the investment banking firm of Otis & Company, and Chairman of the Board of The Continental Gas & Electric Corporation.

Q. What experience if any have you had with public utility companies and particularly in the matter of financing public utility companies in times past?

A. I have been interested in the operation of electric light and power and street railway companies since 1906 and my firm has financed bond issues particularly and pre-

ferred stock issues for a great many electric light and power, gas and street railway companies.

Q. When did you join the firm of Otis & Company?

A. 1913.

Q. Between the years 1906 and 1913 what was your particular connection with public utility properties, if any?

A. I was associated with the Washington, Baltimore & Annapolis Electric Railway, and with the development of light and power companies in the Middle West.

Q. Have you had any experience in the financing of telephone properties in the State of Ohio?

A. Yes, our firm was one of the bankers for the Ohio State Telephone Company and for the Independent companies that went into what later became the Ohio State Telephone Company.

Q. In that capacity did your firm finance any of the requirements of the Ohio State Company or the other companies constituent to the consolidation which resulted in the formation of the Ohio State Telephone Company?

A. Yes, we took an active part in the buying and re- [fol. 8331] selling of the securities of those various companies.

Q. Were you at that time associated with your present firm?

A. Yes.

Q. Has your firm offices in any other City of the United States except the City of Cleveland?

A. Yes, we have offices in Columbus, Cincinnati, Toledo and Akron in Ohio. We have offices in New York, Detroit and Denver.

Q. What is one of the primary purposes for which your firm is organized?

A. Our main business is the buying of the securities of Ohio companies and the redistributing of those securities to investors.

Q. Now when you speak of the buying of securities, do I understand you to mean the purchasing of a large block of securities issued by the utility or other industry and then the disposition of those by sale in the market to customers generally?

A. Yes, that is exactly it.

Q. In other words, you are a purchaser in wholesale lots of the securities of such industries?

A. Correct.

Q. What has been the average amount of securities financed by your house for public utilities and other industries during the past few years?

A. That would average a hundred million dollars a year.

Q. Are you familiar with the financial market for the securities of such utilities, among others, as The Ohio Bell Telephone Company?

A. Yes, I am familiar with the market on that company's securities.

Mr. Kinnison: What is that question, please?

(Question read.)

A. The answer is yes.

[fol. 8332] Q. Are you familiar with the conditions upon which such securities are issued, and by that I mean with respect to the investment on the one hand and the amount of securities which can be reasonably issued and the cost of the money represented by the securities to the utility on the other?

A. Yes, that is my business.

Q. Are you familiar with the business and the general results of operation of The Ohio Bell Telephone Company in Ohio?

A. Yes, I am familiar with their statements.

Q. Based upon your knowledge of the property of that Company, the results of its operations from the standpoint of earnings and upon market conditions for securities of such a company as those conditions have prevailed during the past year and in recent times, what will you say as to the minimum amount which such a corporation, such a public utility, should earn on the fair value of its property in order to attract capital to the industry or the enterprise?

Mr. Dotson: Just a moment.

Mr. Kinnison: We object.

Mr. Dotson: We object to that question. That is for the Commission to determine.

Commissioner Poor: Read it, will you, please?

(Question read.)

Commissioner Poor: While that is the province of the Commission——

Mr. Shuler: I don't hear you.

Commissioner Poor: While it is the province of the Commission to decide that, the Commission must get some [fol. 8333] information some place, and we think this financial man may express his opinion on that matter.

Mr. Dotson: However, this witness has not yet, we believe, qualified sufficiently to make a statement of that kind. He made some general statements as to some knowledge he may have had of these properties in this and other respects, but thus far we believe his qualifications are wholly lacking to pass upon a subject of this kind. He is Mr. Burr's witness, and of course we are listening to the matter and if he has not qualified him we are not to blame, but we do claim the privilege of halting testimony of this kind where that seems to be lacking.

Commissioner Poor: You mean that he is not qualified sufficiently in the actual operation of a utility—on that phase of it? Or maybe the financial end, his connection with the financial house and familiarity with the matter?

Mr. Dotson: In both, for that matter. We cannot conceive how he could testify competently without knowing both.

Mr. Kinnison: Another proposition. The question is misleading. The question is based upon probable values, not upon investment.

Mr. Burr: It is not misleading. It is intended to be just as it is. I mean just exactly what I said.

Mr. Kinnison: Then you are making a rate expert out of a securities man.

Mr. Burr: I am not. I am asking him from the stand-[fol. 8334] point of a banker and with his knowledge of financial conditions and the property of this company and the results of its operation what, in his judgment, is the minimum amount which the company must earn on the fair value of its property in order to attract capital to it. It is the customary question which has been asked over and over again in the rate cases. It is part of the evidence on which courts have from time to time commented, and if there is any question as to the necessity for further qualifying the witness I can very readily ask him some more questions to satisfy the gentlemen on the other side.

Mr. Shuler: My objection to the question is the same as what Mr. Kinnison has suggested. This gentleman sells stocks on which dividends are paid or not paid, and those

dividends are paid on the stock and not on the fair value of the utility.

Now take The Cleveland Illuminating Company. That stock sells on the dividends it pays and not on its value today or tomorrow. And Mr. Eaton does not represent to anybody that its value today is so much and tomorrow it will be so much and the next day it will be some other sum. He simply represents to his clients that here is a stock $100.00 par on which the company over a period of years has been paying a rate of return of so much.

Mr. Burr: You seem to know a good deal about Mr. Eaton's business and what he tells people. I think before the Commission accepts any such statement as that the witness should be put under oath.

[fol. 8335] Commissioner Poor: Never mind the colloquy between counsel. We have been getting along here nicely. Do you mean to say, Mr. Shuler, that you don't think that the financial world takes into consideration the value behind the stocks and securities——

Mr. Shuler: Oh, the assets are——

Commissioner Poor: As well as the dividends that are being paid?

Mr. Shuler: Oh, yes, and they take into consideration the character of the community. For instance, a man would not invest in a power plant in the wilds of Texas,——

Mr. Burr: He does some times.

Mr. Shuler: Where he would in a settled community like Cleveland. But my point is, here is the rate of return put upon the fair value of the utility, and it is unfair to the investor or any one else, because in the fluctuation of prices what might be the value of the utility today would not be the value of the utility tomorrow, and the investment banker I think realizes that. And I don't believe that he says to his clients that this is a splendid value, and you will notice that on all of their statements they directly call the attention of the investor to the fact that "While we believe these statements to be true, we do not guarantee them."

Mr. Burr: Are you quoting from the record?

Mr. Shuler: I am quoting from Otis & Company's advertisements. So it is what should be the return paid on the stock; that is the thing; not the fair value of the [fol. 8336] utility. And Justice Brandeis in the recent

case last summer in his opinion held it was the prudential investment in the Georgia power case.

Mr. Burr: Suppose the amount of stock issued against the property were five times the value of the property?

Mr. Kinnison: Exactly, and then you have the investment feature of it as against property values. That is my objection.

Commissioner Poor: The Commission feels that the question is proper, and if this witness is qualified to answer, it is up to the Commission to give what weight the testimony may deserve.

Mr. Dotson: May I make this further suggestion though in connection with the examination of this witness? Mr. Burr is asking him generally about utility securities. I think it is fair to know what kind of securities he is talking about now. Is he talking about bonded securities or about stock issues?

Mr. Burr: I did not ask him anything about stock issues.

Mr. Dotson: What did you ask him?

Mr. Burr: I asked him what rate the utility must earn, and I referred specifically to The Ohio Bell Telephone Company, the minimum rate on the fair value of its property, to attract capital to the enterprise, and said nothing about stocks and bonds.

Commissioner Maullar: Neither did he ask him what is the fair value.

[fol. 8337] Mr. Burr: Not at all, sir.

Commissioner Maullar: Whatever the fair value is found to be, what should be a fair rate of return on such a utility.

Mr. Kinnison: Capital in whatever form, as preferred stock, bonds or common stock?

Commissioner Maullar: That can be brought out.

Mr. Kinnison: We object to that and ask that the question be made sufficiently definite to enlighted the witness and counsel.

Commissioner Poor: The objection is overruled.

Mr. Kinnison: Note an exception.

Q. You may answer the question.

A. It is my best judgment that a utility such as The Ohio Bell Telephone Company should earn a minimum of eight per cent on the fair value of its property after proper charges for depreciation and obsolescence.

Q. Is that one of the questions which your house considers before undertaking to finance the securities of an industry?

Mr. Kinnison: I object. It is cross examination.

Mr. Burr: You are objecting to the lack of qualification.

Mr. Kinnison: That does not qualify him. That is an expression of his own opinion.

Mr. Dotson: There is possibly a great difference between what their house does and what is customary.

Commissioner Maullar: Isn't the question directed, to [fol. 8338] what his house does?

Mr. Kinnison: Yes, entirely so. The fact that his house does it does not make it weaker or stronger.

Commissioner Maullar: That is for the Commission to determine.

Mr. Kinnison: I object.

Commissioner Poor: The objection is overruled.

Mr. Kinnison: Note an exception.

Q. Is one of the things which you consider the fair value of the property involved?

A. Yes.

Same objection by counsel for the Cities; objection overruled; exception by counsel for Cities.

Q. Is one of the things which you consider the earnings of the industry during a period of years?

And thereupon counsel for the Cities objected to the above question; objection overruled; exception by counsel for the Cities.

Mr. Kinnison: Let the record show an objection and exception to all these questions.

Commissioner Poor: It will be understood that this line of testimony is objected to.

Q. Have you taken those things into consideration in answering eight per cent as you have?

A. Yes.

Q. Assuming, Mr. Eaton, that The American Telephone & Telegraph Company, as a part of the financial service of that Company to the Ohio Bell Company, loans the latter company on notes, on short notes, money with which to finance its capital expenditures, would you or would [fol. 8339] you not—and I am not asking you to place a

value on it—would you or would you not consider that an element in favor of The Ohio Bell Telephone Company with referecne or with regard to its financial status?

Mr. Dotson: Hold on. We object.

Mr. Burr: The question may be withdrawn at this time and I will take it up a little later.

Q. Have you in your possession the annual report of The Ohio Bell Telephone Company to its stockholders?

A. Yes, sir.

Mr. Shuler: Which one?

Q. Have you examined the statement of the financial operations of the Company for the year 1923, contained in that report?

A. Yes, sir.

Mr. Kinnison: Have you a copy of it, Mr. Burr?

Mr. Burr: Have we more copies?

Mr. Shuler: I thought some one told me that report was not out yet.

Mr. Burr: It has been out for quite a while.

Mr. Maltby: You are thinking about the annual report to the Utilities Commission.

Mr. Kinnison: What is this report?

Mr. Burr: The report of the stockholders. We will get copies for you, Mr. Kinnison, and will pass this one around after Mr. Eaton has testified, if you want it.

Q. Based on that statement, Mr. Eaton, what will you say as to whether or not The Ohio Bell Telephone Company is, in your judgment, entitled—and I am asking you [fol. 8340] for your judgment as a banker—to any current bank loans? And you may give reasons for your answer.

Mr. Shuler: I object, because Otis & Company are not bankers in the sense you are using it, Mr. Burr, and the Supreme Court of Ohio, Mr. Eaton, decided that you were not entitled to use the word "banker" on your stationery; am I correct, Mr. Eaton?

The Witness: Yes, that is a fact.

Q. Mr. Eaton, are you familiar with banking conditions in the City of Cleveland?

A. Yes.

Q. To what extent do you have dealings with National and other banks in that city?

A. I am a director of The Cleveland Trust Company, and active in its matters, especially its committee that has to do with the making of loans.

Q. What is The Cleveland Trust Company?

A. It is a bank having a capital and surplus of 13 millions, and deposits of 182 millions.

Mr. Shuler: We are very proud of them in Cleveland.

Q. Does that bank ever loan money to public utilities?

A. Occasionally.

Q. Does the question of whether or not such loans shall be made come within your jurisdiction as a member of the Board of that bank?

A. Yes, I am consulted on such loans by the bank.

Q. Very well. Now based upon the statements referred to in the annual report of The Ohio Bell Telephone Company——

Mr. Kinnison: To its stockholders.

Q. To its stockholders——

[fol. 8341] Mr. Kinnison: Singular.

Q. Will you say whether or not in your judgment that company is entitled to any current bank loans?

Mr. Kinnison: I object to the question.

Commissioner Poor: Overruled.

Mr. Kinnison: Note an exception.

A. It is a fundamental principle of good bankers that the current loans are made only on such operations as may be liquidated in the ordinary course of the borrower's business. That has led to a well-established rule that a bank does not voluntarily loan money to a company unless the quick assets of the company are at least double their quick liabilities. Because of that fundamental rule in banking—and whenever that rule is departed from it leads to disaster in a bank, as illustrated by the bank failures which we recently had in the West—the depositor may ask for his money suddenly in large quantities or small, and a bank has to be in a liquid position if it is to stay in business. The result is banks do not make commercial loans except transactions that can liquidate themselves in the normal course of business. That condition does not obtain in the case of

The Ohio Bell Telephone Company. It has quick assets as of December 31st, from a banker's point of view, of roughly, $4,000,000.00—I beg your pardon—roughly just in excess of $3,000,000.00.

Mr. Dotson: What do they consist of?

Mr. Burr: Wait a moment. Let him finish his answer.

Mr. Kinnison: We are handicapped by not having a [fol. 8342] copy of the exhibit.

The Witness: I think I have this fairly well in mind.

Mr. Kinnison: We do not want to take it from you if you want to use it.

Commissioner Poor: Go ahead. Let this witness continue and then you may ask questions on this point at the conclusion of his answer.

The Witness: The Company has quick or current assets as of December 31st, of just over $3,000,000.00. Its quick liabilities as of that date are over $4,000,000.00. Therefore the Company, from any well-run bank, would not be entitled to an open line of credit.

Q. In your judgment are the earnings of the Company sufficient to justify a mortgage bond issue of any size?

Mr. Dotson: I object to the question.

Q. And by "any size" I mean, for example, $10,000,000.?

Mr. Kinnison: You mean giving it seniority to your preferred issue?

Mr. Shuler: Of course it would have to.

The Witness: Yes, sir.

Q. That is, you say the earnings——

Mr. Burr: Read the question. I don't think he got it.

(Question read.)

Q. That is to say, a mortgage bond in addition to the outstanding obligations of the Company.

Mr. Kinnison: What do you mean by that?

[fol. 8343] Mr. Shuler: How can you have a mortgage bond issue that does not come ahead of other liabilities except other mortgages?

Mr. Burr: That is what I am talking about. Let us get at it this way.

Q. What are the obligations of The Ohio Bell Telephone Company in matter of bonds and notes at the present time as shown by that statement?

A. $22,651,000.00.

Q. Have you calculated the present amount of interest payable on that indebtedness?

A. Yes, that, speaking from memory, amounts roughly to $1,400,000.00 a year.

Q. How much had the Company available for interest as shown by that statement?

A. They had available for interest after deducting the item of rent about three million eight.

Q. That would be about how many times the interest charges?

A. That is about 2¾ times the present interest charges.

Mr. Dotson: Pretty good shape.

Q. On such a showing, Mr. Eaton, could the Company, in your judgment—on such a showing, what amount of bonds, Mr. Eaton, could the Company in your judgment expect to be able to issue and dispose of in the market?

Mr. Dotson: I object. There is nothing here to show that that can in any way be material in a case of this kind because that is directed, if it is directed to anything at all, to its ability to borrow money beyond that which it has already borrowed. Now the question and the answer can [fol. 8344] in no way, it seems to me, throw any light upon the question whether that is a legitimate necessity in the case and for what reason that legitimate necessity exists and whether the inability is due to an improper adjustment of rates and income. There is nothing about it that can in any way relate to this case.

Mr. Burr: Your Honors, Mr. Cooper has already referred in his testimony to the financial service rendered this Company by the American Company. When Mr. Crunden resumes the stand we expect to show how this Company is enabled to finance itself through the assistance of the American Company. We expect to show by this witness that it could not finance itself any other way. We expect the testimony to show that with the Company's financial condition as it is it could not possibly borrow even on a bond issue sufficient money to meet its construction needs for the current year. And that is one of the purposes of this tes-

timony, not only to show that the Company could not do that unassisted, but also to show the value of the financial services to this Company which it receives from the American Company. It is a matter which has been proven time and time again and reflects directly upon the value of the service of the American Company under the license contract.

Mr. Shuler: Just a word. This witness has not shown any hostility, and therefore I don't think Mr. Burr should be permitted to cross-examine him. The witness has answered his question. Mr. Burr said, "On that statement [fol. 8345] is it possible to issue $10,000,000.00 worth of mortgage bonds?" And the answer was "Yes." Now why cross-examine your witness?

Mr. Burr: I am not cross-examining him.

Mr. Shuler: He has answered your question yes.

Commissioner Poor: The Commission would like to know whether that answer was just an unlimited answer. We want to know whether they would be able to borrow ten million additional or whether the ten million would take preference over the outstanding?

Mr. Shuler: The witness says these earnings are after taking care of everything, and answers on that statement of earnings after taking taking care of those things they would be justified in issuing, and ten millions of bonds could be sold.

Mr. Kinnison: Don't we have a right to know the seniority of the various issues? We haven't the information on which to know what he is going into.

Commissioner Poor: That is not clear in my mind. I think the testimony of the witness on this line is competent, going directly to the value of the services rendered by the A. T. & T. to the Ohio Bell, and whether they justified the payment by the Ohio Bell to the A. T. & T.

Mr. Burr: Read the last question.

Mr. Dotson: Just a word more. It seems to me that this fact should be considered, that it is in evidence already that the A. T. & T. Company, who owns these associated companies——

[fol. 8346] Mr. Burr: The stocks of them, you mean—the common stocks?

Mr. Dotson: Yes, we understand that. I am cutting across lots in stating the facts—that it has organized the

companies and related these associated companies to itself in a way suited to its policy and general plan of providing for the needs of these associate companies, not only from an engineering and the management and construction standpoint, but also from a financial standpoint, and they are weaving into the record here the fact that the parent company is prepared to finance these subsidiary companies.

Mr. Burr: Exactly so.

Mr. Dotson: And these subsidiary companies are therefore deprived of the right and privilege of financing themselves. In other words, the American Company takes over the credits of these subsidiary companies and floats the credits of these companies, and it proceeds according to its own methods and its own arrangements to do that very thing.

Now when we get into this question this Commission is asked to provide the funds necessary from the rates that are charged to enable the American Company to finance the credits of the associated companies.

Now we claim that that is carrying it too far, that if these companies are to be dealt with upon the basis of their own credits, through their own means of financing those credits, then of course we would recognize that we were within the broader line of reason. But when we attempt to go beyond [fol. 8347] that and to bolster up the financial scheme of the American Company, which is not before this Commission and cannot be before this Commission in any of these rate cases that pertain to the prices of this service, we are going too far.

Mr. Shuler: I just want to call the Commission's attention to one thing. We have been promised a copy of this 4½ per cent contract, and it has never been turned over, but I have a copy of the contract as it existed in 1920, and Section 6 of that contract provides that The Cleveland Trust Company shall not borrow money for any purpose without the consent of The American Bell Telegraph Company. They could not borrow in the market if they wanted to without the consent of The American Telephone & Telegraph Company. Now I have not seen the contract of today, so I don't know about that. So why take up a lot of time on the value of this when the fact is The American Telephone & Telegraph Company won't allow them to borrow money outside?

Commissioner Poor: The question at issue is, is there any value in the services rendered. And the mere fact that the A. T. & T. owns the stock does not deprive them of the right to be paid for their service, just as an individual who is a stockholder in a company and may be president of the company, the fact that he owns the stock does not preclude him from the right to be paid for the service which he renders to the company. The mere fact that the A. T. & T. owns the stock of the Ohio Bell would not prevent them from receiving a fair compensation for a necessary service. [fol. 8348] Mr. Kinnison: Does the commission realize that this financial contract permits a financing charge to be made?

Commissioner Poor: That may be brought out.

Mr. Kinnison: He is really asking him to say whether it would stand two financing charges or not.

Commissioner Poor: You may proceed with the examination.

Mr. Kinnison: Note an exception.

Mr. Dotson: I would like to have it appear in the record that the license fee that is paid by the associated companies covers, as is claimed by the American Company, the responsibility or duty upon the American Company to finance these associated companies. The local companies are paying for that requirement. Now any order that this Commission, or any consideration that this Commission may give to the question of financing the Company's needs is a question of how far the rates must be fixed in order to enable the American Company to do this financing. In other words, we are working out a financial scheme for the American Company, not for the local company, because that is taken care of, as far as the local company is concerned, in the license contract. It is paying for it right now.

Commissioner Poor: It resolves itself down to whether the payment made by them is a reasonable price for financing; whether they do it through the A. T. & T. Company or a set of bankers.

Mr. Dotson: The A. T. & T. has taken over that responsi- [fol. 8349] bility, as has been pointed out here, and it is denied the right to do anything else.

Mr. Cooper: It is not denied that right.

Mr. Dotson: Doesn't the same contract exist throughout the State?

Mr. Cooper: No, it does not.

Mr. Burr: No, that is not the fact.

(Question read.)

Mr. Kinnison: We object to the question in the light of the fact that the question does not supply the witness sufficient information in regard to the securities to give an intelligent answer.

Commissioner Poor: The objection is overruled. Those facts may be brought out in your examination, whether in addition to the present outstanding obligations that could be done.

The Witness: On the earning shown here, the Company, in my judgment, could issue a maximum of 25 millions of long-time debt. It now has outstanding $22,651,000.00 of such debt. And therefore, in my opinion, it would be entitled to sell, on its earning showing, an additional two to two and a half million dollars of bonds.

Q. That is all?

A. Yes.

Q. Are you familiar with the general position of The American Telephone & Telegraph Company with reference to the financing of The Ohio Bell Telephone Company?

A. Yes.

Q. Does the fact that the American Company has asso- [fol. 8350] ciated companies and that The Ohio Bell Telephone Company is one of those associated companies constitute, in your judgment, any element to be considered in connection with the financing of The Ohio Bell Telephone Company?

Mr. Dotson: I object to the question.

Commissioner Poor: I think the objection is well taken.

Mr. Kinnison: You are giving us an objection and exception as we go through this?

Q. Suppose that The Ohio Bell Telephone Company were to attempt to refund and pay off the $12,000,000.00 of its outstanding notes as shown in that statement——

Mr. Shuler: May we, for the purpose of clear understanding, know whether those notes are secured or unsecured obligations?

Mr. Burr: They are unsecured.

Mr. Dotson: Are those the notes The American Telephone & Telegraph Company have of the Bell?

Mr. Burr: They are the notes of The Ohio Bell Telephone Company to The American Telephone & Telegraph Company for moneys advanced by the latter Company to the Ohio Company.

Mr. Dotson: And those notes then are floated with the guarantee of the American Company?

Mr. Burr: Not at all, so far as I know, not at all. They are simply the notes of The Ohio Bell Telephone Company to the American Company, and which the American Company owns and holds against the amounts of money repre- [fol. 8351] sented by those notes loaned by the American Telephone Company to the Ohio Bell Company for corporate purposes.

Mr. Snook: What was the amount of the notes?

Mr. Burr: Approximately $12,000,000.00. Now go back to the question.

Q. Suppose that The Ohio Bell Telephone Company were to refund the $12,000,000.00 of notes referred to and that thereafter the Ohio Bell was to be entirely independent of The American Telephone & Telegraph Company, no contractual or other relations between them, and that that would therefore require the Ohio Bell Telephone Company to finance itself, what, in your judgment would be the cost to The Ohio Bell Telephone Company for securities sufficient to refund that amount of notes?

Mr. Kinnison: I object to the question.

Mr. Burr: Of course you would. You don't like it.

Mr. Kinnison: Taking the hypothesis of a company whose financial structure has been wrecked, whose credit has been wrecked.

Mr. Burr: What are you talking about? It seems to me it is time we got to some kind of a basis.

Commissioner Poor: That is one of the matters that the Commission is interested in hearing from this financial expert, as to the reasonable charge for financing a thing of that kind. He claims that they do that.

Mr. Dotson: I did not object, but it seems to me that this element enters into it, that there is nothing to show that there would be any such financial policy. On the contract [fol. 8352] the record bears out that the same financial policy will be continued hereafter. That being the case how could testimony of this kind really be of any pertinency, because it should relate itself to the policy that obtains, the

conditions that will prevail in handling the credits of this company. Now the other is purely a theoretical matter that will never happen.

Mr. Burr: And ought not to, ought it?

Mr. Dotson: No, it should not, because that must be the case. That is why I am making the statement I am. Why not consider conditions here before us which are continuing to be the conditions which the Commission will have to deal with? That is my contention: not something that the Commission will never need to deal with; neither will the companies need to deal with; It is not of any value to you to know that. It is not of any value to the Commission to know it.

Commissioner Poor: The Commission will permit the question.

Q. The Commission says you may answer the question. Do you want it read?

A. No. In the most favorable money market the cost of that money under existing conditions here, the cost of the money would be not less than seven per cent, and in an average money market would be seven and a half per cent.

Q. Mr. Eaton, to raise an additional ten million dollars, that is to say, additional to the twelve millions of dollars, in the present market and under the condition outlined, [fol. 8353] what in your judgment would be the cost of that money to The Ohio Bell Telephone Company

Mr. Shuler: I object to the question:

And thereupon the Commission overruled the above objection.

Mr. Shuler: Note an exception.

A. At least eight per cent.

Mr. Burr: At this point we offer in evidence a copy of the agreement between The American Telephone & Telegraph Company and The Ohio Bell Telephone Company, dated the 26th day of March, 1923, it is the so-called license Contract now in effect between those two companies. It may be marked for identification Company Exhibit No. 1.

If counsel requires further identification of the agreement we will ask Mr. Eaton to stand aside, but I assume they will take my statement for the fact that that is the existing contract?

Mr. Shuler: If you say that.

Mr. Harshman: Are there any modifications of it?

Mr. Burr: None whatever. There are no modifications to this.

Mr. Cooper: That is the contract in effect.

Mr. Shuler: You have no letters written between you since, changing it?

Mr. Burr: No.

Mr. Shuler: It is understood that that is the present contract?

[fol. 8354] Mr. Cooper: That is the present contract.

And thereupon the Contract above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Company Exhibit No. 1, and made a part hereof.

Q. Will you please refer, Mr. Eaton, to Page 11 of Company Exhibit No. 1, which is the License Contract, and particularly to Paragraph D on that page, and continuing on page 12, and tell the Commission whether or not you have considered the services rendered by that paragraph?

A. I have.

Q. With the financial assistance of the American Company outlined in that paragraph available to The Ohio Bell Telephone Company, what will you say as to the saving to The Ohio Bell Telephone Company through its ability to secure capital from the American Company, savings in the matter of working capital, in connection with the construction program of The Ohio Bell Telephone Company?

Mr. Shuler: I object to the question.

Commissioner Poor: Basing his answer on the condition of the Company as disclosed in this report?

Mr. Burr: Yes.

Commissioner Poor: The objection will be overruled.

Mr. Shuler: Note an exception.

[fol. 8355] The Witness: There is a very great saving to the Ohio Company in the working capital furnished by the present company.

Q. Will you illustrate?

Mr. Shuler: I move that the answer be stricken out.

The Witness: In my judgment, perhaps I should say.

Mr. Shuler: As modified.

Commissioner Poor: For indefiniteness?

Mr. Dotson: It is wholly indefinite.

Mr. Kinnison: It is meaningless.

Mr. Dotson: It does not disclose anything.

Mr. Burr: It is not meaningless.

Mr. Kinnison: Because you are satisfied?

Mr. Burr: Because the answer is responsive to the question. We cannot make our case all at once. I have asked him what is the result. If you give me time enough I propose to ask him to evaluate that savings.

Commissioner Poor: Unless it is cleared up of course it may go out.

Mr. Kinnison: Note an exception.

Q. On the basis of expected loans to The Ohio Bell Telephone Company from the American Company in the sum of $4,000,000.00 for the year 1924, in addition to the amount of the loan by the American Company, what, in your judgment, will be the saving to the Ohio Bell Company as the result of the arrangement referred to in the contract?

Mr. Kinnison: I object. It is a hypothesis unsupported [fol. 8356] by any evidence.

Mr. Burr: We will show by a later witness that that will be the requirement of the Ohio Bell Company from the American Company for this year, and the only reason we have not already shown it is because we wanted to call Mr. Eaton and allow him to go. If the hypothesis fails, of course the question and answer fail.

Commissioner Poor: Well, in that question, Mr. Burr, you call on this witness to show what the saving to the Company would be, laying no foundation to indicate that this witness knows how much the Ohio Bell pays to the A. T. & T. for rendering that service, so that without making some allocation of what portion of the 4½ per cent is paid for that service I cannot see what the saving would be.

Mr. Burr: I will add to the question this element, that the $4,000,000.00 will be available to the Ohio Bell Company from the American Company at an interest rate not to exceed six per cent.

Mr. Kinnison: I object.

Commissioner Poor: I think the question is still objectionable. They pay the A. T. & T. six per cent for this loan. That still does not take into consideration how much of the 4½ per cent gross is paid in there for these services.

Mr. Burr: The ability of the Ohio Company to get money from the American Company at that low rate of interest is a part of the service performed by the American Company for the Ohio Company.

Commissioner Poor: That is true, and that is paid for. [fol. 8357] That is part of the 4½ that is paid in.

Mr. Burr: And to that extent it justifies the consideration.

Commissioner Poor: Supposing that he would go on the assumption that 1½ per cent of that 4½ per cent covers the payment for the services of doing this financing, and they pay them six per cent; that would cost the Ohio Bell then 7½ per cent for their money. Of course you cannot show what the savings would be until you would be first sure what it is actually costing the Ohio Bell for this, and what it would cost them if somebody else were doing it for them.

Q. What, in your judgment, is the value to The Ohio Bell Telephone Company resulting from its ability to borrow $4,000,000.00 from the American Company during the year 1924 on short notice, on its unsecured notes?

Mr. Dotson: I object.

Mr. Kinnison: They have already paid for that value.

Mr. Burr: At six per cent.

Commissioner Poor: The objection will be overruled.

Mr. Kinnison: Note an exception.

The Witness: As I understand it, the management company makes advances on very short notice, therefore making it unnecessary for the Ohio Company to pay interest on that money for a long period before the money itself is used. The ordinary practice would be for the utility company to provide this money well in advance of the time at which it is to be spent. Therefore interest would run against it and [fol. 8358] during the entire period. For instance, if a four million dollar program is in front of you for this year you would be under the necessity of providing all of that money now and paying interest charged on it during the entire year. If you take it in hundred thousand dollar lots and five hundred thousand dollar lots, as you will spend it, the interest charge to you is therefore very much reduced. This then would result, that instead of paying interest on $4,000,000.00 for 12 months, you would pay interest on possibly an average of $2,000,000.00 for 12 months, which would result in a saving of $120,000.00 a year. I have no doubt

that the actual cash saving would be something in excess of that. Some of your money would be spent in September, some in October and November, on which you paid interest for 1924 for only 30 or $60,000.00. That is a matter for accurate calculation, but would run, from my experience, somewhere in between 125 and $175,000.00.

Mr. Kinnison: We move that the answer be stricken out.

Q. That is for the total saving?

A. For the total saving for a period of one year.

Mr. Kinnison: Now, Your Honor, we move that the answer be stricken out for the reason that there is no fact supplied to the witness as to the terms of the loan and he has supplied it himself from the witness stand.

Commissioner Poor: The motion will be overruled.

Mr. Kinnison: Note an exception.

Mr. Shuler: Mr. Eaton, no well-managed utility would [fol. 8369] ever allow itself to get into a position where it would suddenly demand such a large sum of money, would it?

Mr. Burr: Suppose it can't help itself by reason of low rates?

Mr. Shuler: Let him answer the question.

The Witness: A well-managed utility would anticipate its requirement and would have the money in the bank who would be paying interest on it during the entire period.

Mr. Shuler: Can't you answer my question yes or no, Mr. Eaton? I did not ask you——

The Witness: Would you ask the question again?

Mr. Shuler (continuing): Anything except a question that can be answered categorically.

The Witness: Will you ask it again?

Mr. Shuler: Read it.

(Question read.)

Mr. Burr: Just a moment.

Mr. Shuler: Answer that yes or no.

Commissioner Poor: If the witness can answer it categorically yes or no, he may do that and then explain. And if he cannot answer it categorically let him say so.

Mr. Burr: Let me point out the unfairness of that question——

Mr. Shuler: Well, now, if——

Mr. Burr: Just a moment, please. I say the question is not fair.

Mr. Shuler: Mr. Chairman, I ask——

Commissioner Poor: Just one at a time, Gentlemen.

[fol. 8360] Mr. Shuler: Yes. If you please, this is the——

Commissioner Poor: Just one at a time. Mr. Burr is talking.

Mr. Burr: The question is absolutely unfair and cannot be answered categorically. The question is whether a well-managed utility would allow itself to get into a certain position. Now this Commission knows perfectly well that however well a utility may be managed, if its rates are rates fixed by a body such as this is, and even though its rates may not be fixed in that way, however well the utility may be managed it may be in position where it cannot finance itself at all, and the question of management has nothing to do with the ability of the company to finance itself. The two are totally separate.

Suppose the gas company here, managed as efficiently as a gas company can be managed——

Mr. Kinnison: He is going to tell him what to say.

Mr. Burr: Just a moment—managed just as efficiently as a company could be managed, at the same time that company might readily find itself in a position where it could not finance itself at all. And therefore I say the question is manifestly unfair, particularly when the gentleman on the other side insists upon the categorical answer. It is like the old question asked of the witness on the stand, "Do you still beat your wife", with the insistence upon the categorical answer to that question.

Mr. Shuler: If I had not such a high personal regard for Mr. Burr as a lawyer, if I did not know Mr. Eaton as I [fol. 8361] know him, I would speak entirely differently from what I intend to speak. Here is my point in all these interruptions by counsel for the Telephone Company, my point is Mr. Eaton is put on this witness stand as an expert utility man, qualified as such, considerable experience in the management of public utilities. He is further put on this witness stand as an expert on the sale of utility investments. I asked Mr. Eaton a question which comes within the line of one of those phases for which he stands qualified as an expert. The Commission orders the witness to answer it categorically yes or no, if he can, and Mr. Burr gives us a

harangue on why he cannot answer it, and he is not the witness of whom I have asked the question. If Mr. Eaton as a qualified utility manager and operator is unable to answer that question, well and good, but I do not ask it from Mr. Burr and we do not care for Mr. Burr's reasons why he cannot answer the question.

I am going to object from now on whenever Mr. Burr puts a witness on the stand whom he has qualified in the field in which the examination is being made, to tell why he cannot answer the question. Let the witness answe the question. If the question is an unfair one, as Mr. Bur says, let the man on the stand—we are all familiar with it as lawyers—if the witness cannot answer it, let him say yes or no, or "I cannot answer", or "The question is in such shape that I cannot answer it", or, as Mr. Burr has suggested, let the answer be categorical and let him make his qualifications.

[fol. 8362] Mr. Burr: Mr. Shuler, you forget that we are in the direct examination of this witness and that every question that you ask is an interruption, in the first instance, and it is only permitted because of our desire to be just as courteous as we can.

Mr. Shuler: We have not forgotten it, and I personally withdraw asking any more questions until cross-examination.

Mr. Burr: I did not ask you to do that, but I ask you to allow us, when you do put the question, to state our reasons why we believe the questions are improper.

Mr. Shuler: But not until the witness has refused to answer.

Commissioner Poor. Go ahead.

Mr. Burr: Read the question.

Mr. Shuler: I will withdraw the question until cross examination.

Mr. Burr: Very much obliged to you.

Q. If, when the time comes, Mr. Eaton, when The Ohio Bell Telephone Company will be able to do some permanent financing on its own behalf, what will you say as to whether or not any benefit will accrue to that company in the disposition of its securities by reason of the fact that there is this contractural relationship between it and the American Company?

Mr. Dotson: I object to that question.

Commissioner Poor: Objection sustained.

Mr. Burr: Let the record show that the witness, if per-
[fol. 8363] mitted to answer, would state that in his judgment there is a great, intangible benefit and would be under those conditions accruing to The Ohio Bell Telephone Company in the way of general stability of the American Company's financial condition and the fact that the American Company has the relationship which it has with the Ohio Bell Company.

Mr. Burr: Will you cross-examine at this time, Mr. Shuler?

Mr. Shuler: Have you finished?

Mr. Burr: Yes.

Mr. Shuler: Well, I have a few questions I would like to ask.

Cross-examination.

By Mr. Shuler:

Q. Mr. Eaton, you are familiar with public utility management and corporate inter-relationships, are you not?

A. I am familiar with public utility operation and management.

Q. Are you at all familiar with the inter-corporate relationships between The American Telephone & Telegraph Company and the Bell associated companies, what we call the Bell Associated Companies, seven companies existing in various states of the Union?

A. Yes, I have some knowledge of that condition, sir.

Q. You know that the A. T. & T. owns—now correct me if I am wrong—approximately 98 per cent of all the com-
[fol. 8364] mon stock of all of those companies?

Mr. Burr: I don't think that is quite correct.

Q. Let us limit it then to Ohio, and in Ohio they own approximately 98 per cent of all the common stock of The Ohio Bell Telephone Company; you are familiar with that?

A. Yes, sir.

Q. You are familiar with the fact, of course, that the Cities Service, the Pure Oil, the American Gas & Electric, the Pacific Gas & Electric, the Standard Oil of New Jersey, in the utility game are holding companies and own companies, subsidiary companies, scattered throughout the United States?

A. Yes, sir.

Q. You are familiar with the fact that the U. S. Steel Company is a holding company, owning common stocks of all its subsidiaries in various states in the Union?

A. Yes, sir.

Q. You are familiar with Standard Parts of Cleveland?

A. There isn't any such thing.

Q. No; you were?

A. Yes, sir.

Q. And Goodyear?

A. Yes, sir.

Q. Do you know of any public utility or industrial corporation, a holding company, owning practically all of the stock of its subsidiaries which makes a charge to those subsidiaries for financial assistance?

A. I know of many that do.

Q. You do?

A. Yes.

Q. Which ones?

A. All of the leading ones, insofar as I know of their——

[fol. 8365] Q. Name particularly one of them?

A. The Electric Bond & Share Company, The American Power & Light, The Cities Service Company, through the managers of their subsidiary, H. L. Doherty & Company.

Q. What are those charges?

A. They vary in all of those companies.

Q. Name me one case that you know of where a charge was made?

A. The American Power & Light, for instance.

Q. The American Power & Light?

A. Yes, sir.

Q. Where does it own companies?

A. It owns Duluth, it owns a group of properties on the Pacific Coast; they own some in Kansas; they own some in Texas.

Q. Now name a specific instance; name a specific instance where they made a charge?

A. They charge to all of those companies a percentage of their gross.

Q. What is that?

A. They charge to all of those companies a percentage of their gross income.

Q. I am satisfied with that answer. They charge them a percentage of their gross income. What is that percentage?

A. Five.

Q. Five per cent; all right; for what? Wait a minute. Can you obtain a copy of the contract under which that charge is made?

A. No.

Q. Are you familiar with that contract?

A. No.

Q. You are not?

A. No.

Q. You don't know what that contract comprehends?

A. Not fully, no.

Q. It is a particular charge for a particular thing, is it [fol. 8366] not? Well, he says he is not familiar with the contract. You are not familiar with the contract, I take it?

A. No, sir.

Q. Then what you are testifying to—how can you testify to it?

A. Well, that is based upon my general information and from what their officers have told me of their practice.

Q. It is hearsay testimony?

A. It is what officers and directors of those companies have told me their practice is.

Q. Do you know the percentage of stock holding in the subsidiary?

A. In the instance of the company I have mentioned, it is 100 per cent except for directors qualifying shares.

Q. And you have been told by officers that they pay five per cent on every loan they make?

A. No.

Q. What did I understand you to say?

A. I said that they charge five per cent for the services that they rendered to their subsidiary companies.

Q. For what, for financing?

A. No.

Q. What is that?

A. No, for the entire services which they perform.

Q. You have not then caught my question at all. Your answer is not to my question. My question was for financing, not for services rendered, because of course if your answer pertains to various services rendered or things furnished, we would not know what percentage, if any, was allocated to financing unless we had the contract.

[fol. 8367] A. May I have your question read again?

(Previous question read as follows: "Do you know of any public utility or industrial corporation, a holding company, owning practically all of the stock of its subsidiaries, which makes a charge to those subsidiaries for financial assistance?")

A. I am sorry I interpreted your question a good deal broader than you intended it. I assumed you were referring to the entire arrangement because your original question was, as I recall it, was I familiar with such relationships,——

Q. Was your answer to my question——

A. So that my answer is not correct, because the charges to which I refer have to do with the entire service rendered and not solely to that financial assistance.

Q. Your answer to my question, and confining your answer to my question, must be what? It must be "NO", mustn't it?

Mr. Burr: No, let us read the question again.

(Question read.)

Mr. Burr: Will you make the question a little broader or plainer in this respect——

Mr. Shuler: No; my reason, Mr. Commissioners, is this, they are putting this man on the stand to show the value of this financial assistance. Now my question is confined to a cross examination of the witness as to direct-examination, which is the only proper place for me to cross examine this witness. I could not cross examine this witness as to contracts existing between other holding companies, because [fol. 8368] the witness himself says he does not know of any; he has never seen, he does not know what those contracts contain. That would be the first objection. The second objection would be that the direct-examination has not brought out this witness as an expert on those other phases of any contract that may exist. So I must of necessity confine my question on cross-examination to the question on direct.

The Witness: Now may I answer the question?

Q. If you can?

A. I am informed by——

Q. No, what you know; not what you are informed. This is the same as a Court proceeding. You are only allowed to testify to what you know.

A. The testimony could go to the best of my knowledge and belief.

Mr. Burn: Yes, you are entitled to answer it that way.

Mr. Shuler: No, he is not at all now. I want this witness to be just fair and that is all.

Mr. Kinnison: He can say no if he don't know.

Mr. Shuler: I don't want him to even appear as a partial witness if he can avoid it.

Q. You have admitted you have never seen any of the contracts?

A. I have not.

Q. You have never seen any checks made from one to the other or receipts for payments for these things, have you?

A. No.

Q. Then how can you testify otherwise than that you don't know?

A. Well, I have, as I said——

Q. Of your own personal knowledge?

[fol. 8369] A. I have been informed by the officers and directors of these companies that they make such charge.

Q. Mr. Eaton, do you think you are fair in this matter in attempting to get into the record hearsay evidence when hearsay evidence is not competent evidence, and you know that it is not?

A. I do not think it improper for me to testify as to the contracts of other companies with which I am not associated.

Mr. Shuler: What does the Commission rule on his right to give hearsay evidence?

Commissioner Poor: He must answer according to his knowledge, and limit it to his knowledge.

Q. You have no personal knowledge on it, have you?

A. Only that supplied by officers and directors of these various companies.

Q. Now, Mr. Eaton, what should a public utility carry as liquid assets? Or let me state it this way, please. What would be liquid assets of a public utility?

A. Its cash on hand, its accounts receivable and its merchandise that it has for sale if it conducts a store.

Q. Now, listen, Mr. Eaton, you are here testifying on The Ohio Bell Telephone Company and I am asking you with reference to The Ohio Bell Telephone Company, of course.

What would be the liquid assets of The Ohio Bell Telephone Company?

A. Its cash and its accounts receivable.

Q. Now you are familiar with public utility corporations—that Commissions only allow them a certain sum for working capital, are you not; which means an amount of money [fol. 8370] required to conduct their ordinary business in the year; is that right?

A. That is something, of course, that varies very greatly from state to state.

Q. But the public utility never carries much cash assets?

A. Except in preparation for construction programs.

Q. Therefore most public utilities find themselves in a position where they do not deal with banks as a commercial manufacturer does, who gives the bank his trade acceptances for purposes of loans; isn't that correct?

A. A public utility cannot deal with a bank on that basis.

Q. So it is nothing astounding that The Cleveland Trust Company would not make a loan to the Bell Telephone Company on that statement you have, is it?

A. It would not be good banking practice for the Cleveland Trust Company to do it.

Q. To any public utility?

A. No, it would not be good banking practice.

Q. Now I have not a copy of your Bell statement, but I may have misunderstood you. I understood you to say that the amount available for interest was $3,800,000.00; is that correct?

A. That is roughly correct, yes.

Q. By that——

A. That is approximately correct.

Q. You made some statement of $1;400,000.00; what was that?

A. That was the annual interest on the company's present debt.

Q. That is right. And the present debt is 22 million, isn't it?

A. 22 million odd, yes.

[fol. 8371] Q. So after paying the interest on that 22 million they would have available for further interest payments $2,400,000 on that statement, would they not?

A. Two million four approximately, yes, sir.

Q. Then why did you testify that on that statement as it is the company could now only issue about two million

and a half more of bonds? Wait a minute; let me get the question finished; $2,400,000.00 of money available for interest would enable the company to sell how many dollars worth of bonds?

A. If you mean two million four available for interest——

Q. That is what you said. I am only taking your word.

A. Yes, but you have already deducted a million four interest.

Q. Let us get ourselves correct. You told me that this statement showed $3,800,000.00 available for interest?

A. Yes, sir.

Q. You told me that $1,400,000.00 would be required to pay the interest on present obligations?

A. Correct.

Q. That would leave $2,400,000.00 available for further interest obligations—interest on further obligations?

A. You may construe it that way and be correct, I think.

Q. All right; correct, am I?

A. Yes.

Q. Now with $2,400,000.00 of money available for further mortgage obligations, how much could the company sell additionally; how much mortgage bonds additional could it sell?

A. It is a requirement in a financing of this kind——

[fol. 8372] Q. I do not care for you to explain; just the amount?

A. You say two and a half million dollars?

Q. While $1,400,000.00 will pay the interest on 22 millions of dollars, then $2,400,000.00 would only justify the sale of $2,500,000.00 additional; in other words the whole obligation could be paid off in one year's interest, and you say that is all that is justified to be issued?

A. You of course are showing the amount left after you have already deducted a very large interest charge.

Q. Correct.

A. Which no investor or banker would permit you to do if you were selling him securities.

Q. Mr. Eaton, your answer is that they could only issue $2,500,000.00 additional?

Mr. Burr: No, he told you what his answer was.

Q. Is that your answer?

A. Yes.

Q. Then why did you answer Mr. Burr that the earnings of the company are sufficient to justify ten million dollars more of bonds?

Mr. Burr: He did not say that.

Mr. Shuler: I refer to the record.

Mr. Kinnison: That is the record.

The Witness: I stated that this statement would justify ten million dollars of a bond issue. I was assuming that he was making that a prior charge ahead of anything now existing.

Q. Now that question a minute again. What amount of mortgage bonds would that statement justify today, for-[fol. 8373] getting all present obligations?

A. That is, if there were no present obligations?

Q. Precisely so.

Mr. Kinnison: You mean bonded obligations?

Mr. Shuler: All kinds.

The Witness: It would justify a 25 million dollar bond issue.

Q. Now you stated a moment ago when you answered Mr. Burr 10 million; did you mean that that 10 million should be a first lien on the property?

A. Yes; his question was, would this company justify a 10 million dollar bond issue. My answer is yes.

Q. Will justify a 25 million dollar bond issue, will it not?

A. Yes.

Q. What do investment houses demand in bond issues, that the earnings should represent for bond issues? Do I make myself clear?

A. Yes, entirely. The normal requirement is two and a half times. The earnings must be two and a half times the bond issue. That is varied either way and effects very much the cost of the financing and the yield of the security to the investor.

Q. Now on $3,800,000.00 you contend that a mortgage bond issue to the extent of how much would be justified?

A. Not to exceed the extent that would use up—I will just calculate that to be exact, if you would like to have me do it. Your total bond interest should not exceed a million and a half dollars.

Q. A million and a half dollars?

[fol. 8374] A. Per annum. On that showing you would have two and a half times your interest charge.

Q. What would be the principal of the bond issue?

A. That would depend on the coupon rate on the bonds.

Q. They are selling at five now, aren't they?

Mr. Burr: Who are?

Mr. Shuler: The investment houses.

The Witness: No, I cannot accept that statement.

Q. How about Continental, what does it sell to yield?

A. It depends on the security it has. It has a five and it has a six and it has a seven.

Q. You are talking about good security and that is the only kind of stuff your house deals in, and that is what your testimony is in this case—based on a good sound utility?

A. Yes.

Q. On a five per cent basis how much could be sold?

A. No bonds of this character could be sold on a five per cent basis.

Q. This is not a good utility?

A. I know of no utility that is being sold on a five per cent basis.

Q. I thought I understood you to say that some were sold at five and five and a half?

A. No, no, I said it has bonds that have a five per cent coupon, but that is subject to discount.

Q. Take the Ohio Bell Company, what would its coupon charge be?

A. It would have to yield at least six per cent; 25 millions at that would just be a million and a half dollars.

[fol. 8375] Q. That is the way you figure it out?

A. Yes, sir.

Q. A million and a half and 25 million?

A. Yes, sir.

Q. Hasn't your house, within the past three months, put out utility collateral notes?

A. Yes.

Q. To yield——

A. Seven per cent.

Q. Which one was that?

A. Continental Gas & Electric Company.

Q. Now, Mr. Eaton, the corporation that owns a lot of subsidiaries is interested in keeping those subsidiaries in good financial condition, is it not?

A. Yes.

Q. It is really of prime importance that it should keep those subsidiaries in good condition?

A. Exceedingly important, yes.

Q. Because its earnings depend upon the utility being in a good condition?

A. Yes, its earnings are very directly affected by that.

Q. Therefore it is to the interest of the A. T. & T. to advance sums of money to these associated companies at all times that they require them? Is that not right? Is that correct?

A. I don't think I could say necessarily to its advantage. It might use its money elsewhere very much more advantageously insofar as yield is concerned.

Q. I did not ask you that question. I did not ask you how you would advise the company to invest its floating assets. Please confine the answers to the questions if you can answer them.

A. May I have that question?

(Question read.)

A. It is a little difficult for me to answer that question [fol. 8376] directly. It seems to me it is a question of the interest return it gets on this money.

Q. All right. Now, Mr. Eaton, what is the average return obtained by banks on their loans?

Mr. Burr: Are you referring to National banks?

Mr. Shuler: Well, I can only answer with reference to a bank.

The Witness: That varies in different parts of the country.

Q. I am talking about Ohio.

A. Take it by sections. I assume in this section of Ohio the average is probably over seven per cent.

Q. You think it is?

A. Yes.

Q. Do you know?

A. That is my judgment as to what it is.

Q. But you don't know, as a matter of fact, do you?

A. No, I don't know.

Q. Do you know the average rate of return made by the New York Life or the Mutual Life or the Prudential Life on their investments?

A. Those figures are not in my mind at the moment. I am a stockholder in the Union Central of Cincinnati.

Q. Which is one of the highest in the country by the way?

A. And our return there is 6½.

Q. Because you loan mostly in the west. That is one of the largest. That company has one of the largest returns of all insurance companies. The Northwestern used to have [fol. 8377] the largest until they lost——

Mr. Burr: Just a moment.

Mr. Shuler: Strike it all out.

Q. Do you know what the eastern companies make for theirs?

A. No, I cannot answer that.

Q. Do you know anything about the financial——

A. I have a general idea.

Q. A six per cent loan is a pretty good loan, isn't it, Mr. Eaton?

A. It depends entirely on the liquidity of it and the security behind it.

Q. But I mean if the security is fair six per cent is a good loan—a good return on the money?

A. No, not if the security is fair. If the security is excellent it is good.

Q. If the security is excellent that would be an excellent return, woudn't it?

A. No, that would be a normal return on an excellent bit of security.

Q. What is the next higher class beyond excellent?

A. Good; good, fair, poor, rotten.

Q. What would you call a municipal bond; how would you classify a municipal bond?

A. Excellent.

Q. Correct. How would you classify a real estate mortgage bond or loan?

A. They come in many categories.

Q. What would be a government bond?

A. That of course is the highest class of bonds.

Q. That would be Class Excellent A?

A. Yes.

Q. What I am trying to get at, Mr. Eaton, is this, The American Telephone & Telegraph Company has large sur- [fol. 8378] plus capital you say always carried; if they are able to invest that at six per cent and get six per cent for it, they have got a pretty good average return for their money, have they not?

A. It depends entirely on the money market. There are frequently times they can loan it on call at seven per cent.

Q. We are talking not about temporary fluctuations in the market, but over a long period of time?

A. The price of money varies just as rapidly and as constantly as the price of any other commodity.

Q. You have no trouble in selling The Ohio Bell Telephone Company preferred stock at 105, do you?

A. There is a fair demand for the stock, I would say, at that price.

Q. It is selling at 105 to what?

A. To 104.

Q. Recently sold at 105, did it not?

A. Yes.

Q. I think at 105½, but I am not certain.

A. I think it touched that one day.

Q. It is a seven per cent preferred stock, isn't it?

A. Yes, sir.

Q. How much is outstanding, do you know?

A. My memory is it is about $28,000,000.00—$28,215,- 000.00.

Q. $28,000,000.00 of stock you say, first preferred stock, is outstanding which is selling on the market at 105?

A. Yes.

Q. In your opinion then you could not issue any more than $2,500,000.00 of bonds on The Ohio Bell Telephone Company at the present time, notwithstanding there is $28,000,000.00 of preferred stock outstanding which is sell- [fol. 8379] ing on the market at 105?

A. You see——

Q. You can answer that yes or no, can't you?

Mr. Burr: Let him answer.

Mr. Shuler: He can answer yes or no and then take care of it.

Mr. Kinnison: The witness is perfectly capable of taking care of himself.

Mr. Shuler: If he cannot answer he may say so and then the deductions to be drawn from the answer are for the Commission.

The Witness: I say two and a half millions is the normal amount of bonds to be put out against that showing, considering, however, this company has a subsidiary of The American Telephone & Telegraph Company.

Q. You mean is, not as?

A. Is, I said; considering it is that. The investor has come to have so high a regard for that credit that he buys most anything that is sponsored by that company.

Q. Then this company is not a normal company, is it?

A. Its securities as reflected in the market——

Q. Are not normal?

A. Are not based on its record, and that same stock that is now 105 was 85 before it came under the wing of the American Company.

Q. When was that?

A. That was in '21.

Q. Don't you know that in '21—you say it was selling at 85?

A. The preferred stock of this company.

Q. Of what?

A. Of The Ohio State Telephone Company, that is.

[fol. 8380] Q. What was the Ohio Bell selling at; what was the Cleveland Telephone selling at?

Mr. Burr: There is no such thing.

Mr. Shuler: We are talking about '21. Wasn't there?

Mr. Cooper: No. The Cleveland Telephone Company——

Mr. Shuler: I am trying to get at '21; the Ohio Bell was not selling on the market in '21 at 85 for the preferred because there was no such company in 1921. You mean the Ohio State was selling at 85?

The Witness: Yes, sir, it was exchanged for this present stock.

Q. The point is this——

A. It would have been more correct to have said the predecessor stock of this company.

Q. Mr. Eaton, you said the reason that the first preferred

stock is selling at 105 is because it is associated with The American Telephone & Telegraph Company?

A. For no other reason in the world.

Q. And that is the reason I contend and am trying to get you to admit that they could therefore sell more than $2,500,000.00 worth of mortgage bonds on the property which would precede the $28,000,000.00 of preferred stock?

A. In a financial set-up bonds have to bear a certain proper relation to preferred stock and common stock, and it is a rule of all good companies and of good bankers to limit the bonds to an interest requirement that will not exceed two-fifths of the net earnings.

[fol. 8381] Q. Mr. Eaton, a preferred stock is secondary to a bond, isn't it?

A. Of course, and yields a very much higher rate of interest, and that is because it is secondary and because it is used to furnish junior money.

Q. Certainly, but you do not mean to say that the preferred stock which is limited to a certain return will get a certain value because of its association with another corporation where the bond buyer won't take the same chances as the preferred stockholder, od you, or take into consideration the same things?

A. The bondholder never takes the chances that the preferred stockholder does; he takes the lesser return; the preferred stockholder takes a greater risk and gets a much greater return and the common stockholder takes a still third risk and expects a very much larger return by reason of the position which he occupies.

And thereupon a recess was had until 1:30 o'clock P. M. of same day (Friday, February 29th, 1924.)

[fol. 8382] Friday Afternoon Session

February 29th, 1924.

And also C. S. Eaton, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. Shuler:

Mr. Burr: In order to keep the record straight we will offer in evidence the Annual Statement of The Ohio Bell Telephone Company to its stockholders for the year 1923,

being the report containing the statements to which the -tness Mr. Eaton has been referring from time to time, and I assume that counsel will accept my word for the fact that this is a true and correct copy of the report without my calling Mr. Cooper or someone else to identify it?

Mr. Shuler: Sure.

Mr. Burr: Otherwise we will make proof in the ordinary way.

Mr. Shuler: May I just have a piece of information? This telephone operating revenues, $24,685,133.74, is the total operating revenues after deducting the 4½ per cent payment to the A. T. T.; that is correct, isn't it?

Mr. Cooper: Yes, that is right.

Mr. Shuler: So that it is only 95.5 per cent of the total revenues. Can you give us the exact amoung of that payment? I figured it up $1,081,000.00; is that approximately correct?

[fol. 8383] Mr. Cooper: Yes, that is approximately correct.

Mr. Shuler: Then the 4½ per cent payment in 1923 was $1,081,000.00 approximately?

Mr. Cooper: Somewhere around there. I don't recall exactly.

The Witness: With the Commission's permission, I would like to say that in my early cross-examination when I referred to percentage charged by holding companies to subsidiaries I was not including in there any charge for money actually loaned. When I referred to a five per cent charge as being a normal one, that did not include any charge made for moneys actually loaned to subsidiaries.

Mr. Burr: By the parent organization?

The Witness: By the parent organization.

Mr. Burr: Well, is there such a charge?

The Witness: Always such a charge.

Mr. Burr: Interest charge?

The Witness: Always an interest charge for money actually loaned.

Mr. Burr: If it were not for the contract between The American Telephone & Telegraph Company and The Ohio Bell Company, to which we have been referring from time to time, at what price would the preferred stock of The Ohio Bell Telephone Company be selling, in your judgment?

Mr. Shuler: Oh, we object.

Commissioner Maullar: You are asking this witness for his opinion?

Mr. Burr: Yes, that is all.

[fol. 8384] Commissioner Maullar: You may answer. The objection will be overruled.

Mr. Shuler: May we cross-examine him a moment to see whether he knows anything about the contract? I don't believe Mr. Eaton has ever read the contract.

The Witness: Yes.

By Mr. Shuler:

Q. When did you read it?

A. Today—last night.

Q. Today?

Mr. Burr: And last night, he said.

Q. And last night? What does that contract provide as to services furnished that gives this element of value to the preferred stock?

A. That contract provides that the parent company will lend its assistance in all of the financing operations of its subsidiaries.

Q. And it is that paragraph then to which you refer when you are going to give your opinion as to the effect of this contract on the preferred stock; is that right?

A. Yes, the fact that the finances of this company are directed and supervised by so sound an organization as the American Company greatly enhances the value of that stock in the mind of the investor.

Q. Now you would so state to an investor in purchasing that stock from you, that this contract gives it an additional value to him and adds greatly to the security of the preferred stock; is that right?

A. Yes, sir.

Q. That is right?

A. Correct.

Q. Do you know how long that contract lasts and when [fol. 8385] it may be terminated and whether it may be terminated at will? Do you know that, I ask you?

A. I know, as a matter of experience——

Q. No, no.

Mr. Burr: Let him answer.

Mr. Shuler: I am asking him if he knows where the provision of that contract is that makes it for any length of time.

Q. Let me ask you this, does that contract continue in existence for any length of time? Now you have read it and you are giving us an opinion based upon your accurate and full comprehension of that contract. Now answer my question.

A. I know from my experience in such matters that these contracts are continuously in force between the parent company and its subsidiaries.

Q. What do you know of this one? Is it going to be in force another year from now?

A. I don't recall the date stipulated.

Q. You don't know a thing about that, do you, and yet you tell us you would tell an investor today that he was safe in buying this preferred stock because of a contract that exists between the Ohio Bell Company and The A. T. & T. Company?

A. I would tell him that his investment was very greatly protected by the fact that it has behind it so experiences and solid an institution as The American Telephone & Telegraph Company.

Q. Would you add to that statement that "These statements are not guaranteed, but we have them on good in-
[fol. 8386] formation"?

A. No.

Q. You would not guarantee the statement, would you?

A. I certainly would assure him that he had a very substantial thing upon which to rely in that association. I would not guarantee that.

Mr. Burr: When you spoke this morning of a possible issue of $25,000,000.00 of bonds by The Ohio Bell Telephone Company, what consideration, if any, did you give to the fact that there was already certain outstanding underlying bonds upon the properties now comprising the Ohio Bell Company, or at least upon a part of the properties comprising that company?

The Witness: I spoke of 25 millions as being the maximum possible issue upon the present earnings. I mean that there is already approximately 22½ millions of outstanding debt and that the issue would be increased by approximately 2½ millions.

Mr. Burr: That is all.

By Mr. Shuler:

Q. Are all of your investments sold on earnings statements?

A. With the exception of municipal bonds they are all sold upon earning statements.

Q. You don't care a particle about the value of the property behind it?

A. Yes, we consider that very material, considering, however, that physical properties have very little aside from an earning power.

Q. You learned that in the Standard Parts case particularly, didn't you?

A. That was very beautifully illustrated in that com- [fol. 8387] pany. That had 25 millions of physical assets that realized perhaps seven or eight on liquidation because they did not have an earning power.

Q. Mr. Eaton, as you said this morning, if $4,000,000.00 were borrowed to be used during the year it would be unfair for the parent company to charge interest on the four million beginning today, would it not?

A. It would not be unfair. It would be the normal practice. However, it appears it is not done that way by the American Tel. & Tel. with its subsidiaries.

Q. Do you know what the A. T. & T. borrows money at? It can borrow money at a very low rate of interest, can it not?

A. It has very excellent credit. However, for a good deal of this money it pays 9 per cent to the stockholders.

Q. I beg your pardon?

A. For considerable of its money I know it pays about nine per cent.

Q. Can you give me one instance where it pays nine per cent on the money that it borrows?

A. On the money that it owes to its stockholders.

Q. Let us be fair now and reasonable. I asked you for money that it borrows and you are telling me what it pays its stockholders, nine per cent per annum. That nine per cent is dividends?

A. I understood your original question to be what it pays for money, not borrowed money.

Q. When one talks about that to investment houses what do investment houses understand one to mean?

A. The company pays several rates for money that is

secured by first mortgages on its assets. It pays a some-
[fol. 8388] what higher rate for money that is next, junior money, and money that represents a preferred position, such as preferred stock.

Q. Now just a moment. You know perfectly well as an investment man that no company does or can agree at all events to pay any rate on preferred stock, do you not? It can only pay a dividend out of earnings; is that correct?

A. Only out of earnings.

Q. Certainly.

A. But it does agree to pay a certain fixed rate out of earnings if those earnings develop.

Mr. Burr: Correct.

Mr. Shuler: Certainly.

The Witness: Then it must pay to the people who take the low position with the company, namely those who furnish the real junior money by way of common stock—it is compelled to pay to those people who take a great risk a very much larger return, and it is money of that sort that has made possible the great enterprises of this country. Cleveland is a great city today because our people have been willing to put their money into common stocks of our great corporations.

Q. I don't care for that unless you want me to bring out some particular instances where you have sold some preferred stocks, which are practically bonds, and get nothing on them, such as Goodyear and Standard Parts.

A. Our firm did not sell any Goodyear preferred or Standard Parts preferred.

Mr. Burr: I don't think that is fair.

[fol. 8389] Mr. Shuler: I don't either. I was only cutting off his thesis.

The Witness: I was saying that in defense of our people in Cleveland, that in spite of unfortunate losses in instances of that kind they have not hoarded their money and put it into first mortgage bonds only. They are still willing to take a risk for the benefit of the community.

Q. But to go back to my only question that I have before you, Mr. Eaton, do you know what rate of interest the A. T. & T. pays for its money; so that we may have no misunderstanding about it, in view of the fact that I am only

a layman, I will say what rate of interest does it pay for its borrowed money?

A. Well, I am not competent to answer that question fully.

Q. You don't know that they pay 4½ per cent?

A. I am not advised as to what they pay.

Mr. Burr: You do not make that as a statement of fact, do you?

Mr. Shuler: I asked him if he knew.

Mr. Burr: You did not ask him if he knew whether they did. You asked him if he know that the American Company did that.

Mr. Shuler: I do not intend it to be considered as evidence.

Mr. Burr: All right.

Mr. Shuler: That is all so far as I am concerned.

Mr. Burr: Have the Commission any questions to ask Mr. Eaton?

[fol. 8390] Commissioner Maullar: I haven't any.

Mr. Burr: That is all, Mr. Eaton. Thank you.

Mr. Shuler: It is understood Mr. Eaton is excused subject to call?

Mr. Burr: You are willing to return for further cross-examination?

The Witness: You mean today?

Mr. Shuler: Oh, no, not today.

Mr. Burr: At some subsequent time?

The Witness: Yes, sir.

[fol. 8391] And also A. B. CRUNDEN recalled as a witness, having been heretofore duly sworn, continued his testimony in chief, as follows:

Examined by Mr. Burr:

Q. Mr. Crunden, at the close of your testimony yesterday I believe that there had been offered in evidence——

A. We were about to offer in evidence certain exhibits, Mr. Burr.

Q. I think there had been offered in evidence——

A. But not numbered.

Q. No. 11.

A. I will take that back.

Q. Numbers 11, 12, 13, 14 and 15 had already been offered. We were referring to some charts in which you have applied a straight line principle to an assumed taxicab business in a simple way.

A. Yes, sir, and Mr. Williams was engaged in preparing these exhibits to be marked for identification.

Mr. Shuler: This is simply a type to explain the system?

Mr. Burr: Yes.

Mr. Shuler: Mr. Crunden, what is your average straight line based on, 10 years, 15 years or 20 years?

The Witness: In these exhibits?

Mr. Shuler: No, no, in the Bell?

The Witness: On the life of the telephone plant? Well, that varies in different areas in accordance with the pro-

[fol. 8392] portion of long and short life plant.

Mr. Shuler: I mean all over.

The Witness: There is no such thing.

Mr. Shuler: What would it be in Ohio?

The Witness: I would not be *albe* to say without definite examination of the figures. In any event it is an engineering question and really should be addressed to an engineer.

Mr. Burr: The Chart marked Crunden Exhibit 16, and which is headed "Example to illustrate Depreciation Accounting during periods when property in service is (1) growing, (2) stationary; and (3) declining", is offered in evidence.

The Chart marked Crunden Exhibit No. 17, and entitled "Net investment reserve for accrued depreciation", is also offered in evidence.

We next offer the Chart marked Crunden Exhibit 18 entitled "Annual realized depreciation, annual expense of depreciation."

And next is No. 19, the Chart marked Crunden Exhibit 19, entitled "Ration of annual realized depreciation to investment and ration of annual expense of depreciation to investment".

The last of this series is marked Crunden Exhibit No. 20, and is entitled "Record of cars in service by years and serial numbers". That also is offered in evidence.

And thereupon the Paper Writings last above referred

[fol. 8393] to were marked for purposes of identification and were offered and admitted in evidence on behalf of

The Ohio Bell Telephone Company and are herewith submitted, marked Crunden Exhibits Nos. 16, 17, 18, 19 and 20, and made parts hereof.

Mr. Shuler: I do not understand that second column. Do you mean to say, Mr. Crunden, that in the taxicab business one car will last for 24 years?

The Witness: No, sir. I will explain this exhibit, if the reporter is ready. Exhibit No. 16 gives an illustration of a taxicab business in which a man is assumed to enter the business starting with one car in the first year. During the first ten years the business grows steadily, requiring the addition of one car in each year. During the next subsequent six years the business remains stationary; that is, it requires ten cars in service during each of such six years. During the succeeding years down to the 25th year the business declines, requiring one less car each year until in the 24th year only one car is needed. The man is then assumed to retire from business at the end of the 24th year, all of the cars having been used up in service. It is assumed that the cars cost $1,000.00 each and that they have a service life of five years, and that for convenience there is no salvage. The columns of the chart are suitable headed so that I think the whole statement is self-explanatory.

It shows in the first column the years involved, and in [fol. 8394] the second column the number of cars in service each year. It then shows the serial numbers of the cars added, and in the third column the serial number of cars retired.

It also shows in column 4 serial number of cars added for replacement. Those cars are identified for the purpose of comparison with Exhibit 20, to which I will refer later.

In column 5 it shows the net investment in the cars at the beginning of the period. The investment starts with $1,000.00, reaches as high as $10,000.00 and finally declines to $1,000.00, and then to zero.

Column 7 shows the accumulated gross additions during the entire period amounting to $30,000.00 for both original and replacing cars.

Then there are some columns devoted to the depreciation account. First it shows the reserve for accrued depreciation at the beginning of the year; then the annual expense

of depreciation; that is the amount charged to expense and credit to reserve at the rate of 20 per cent per annum based on a five year life and 100 per cent depreciable cost.

In column 9 it shows what I term the annual realized depreciation. That is to say, the charges made to the reserve account, when the property loss culminates upon the retirement from service of the several cars.

Column 10 shows the reserve for accrued depreciation at the end of the year.

The remaining columns show some ratios. In Column 11 it shows the annual expense of depreciation which you will [fol. 8395] note remains 20 per cent throughout the period under review.

Column 12 shows the per cent of realized depreciation to the property of the same year, and the percentages in this column vary very widely.

Column 13 shows the per cent that the reserve is at the beginning of the year of the property existing at the same date that is taken for the calculation for the reserve. The reserve starts at zero and winds up at 100 per cent. The bearing of the several columns of that chart is made more clear by reference to the subsequent chart.

Mr. Shuler: May I ask a question for information?

Mr. Burr: Yes, be glad to have you to.

Mr. Shuler: Mr. Crunden, taking the telephone business, which does not go out of existence, why do you choose the taxicab business which does go out of existence? Because you can more clearly demonstrate your system?

The Witness: Yes, sir, and because the depreciable telephone property does go out of business. That is to say, years ago we had certain kinds of plant for which reserve accounts were raised, and those particular kinds have gone out of service and the reserve in respect to that has been used up. At the present time we have other kinds of plant for which we now have a reserve. Such plant in time will disappear and the reserve will disappear and no doubt the property of the telephone company will continue to be depreciable in a large measure and new reserve will appear and in time disappear, so that the layman's view—perhaps not your view, Mr. Shuler, but the average layman's view—[fol. 8396] that a reserve for depreciation remains the same, remains in a state of poise, a constant account which remains without change, is from the accounting point of

view incorrect. The accountant conceives of the reserve as in a continual state of flux. The amounts that are there are speedily gone and other amounts take their place. It is just as if there was a trough of water at which a horse was drinking. Water is trickling into the trough on one end and it is passing away through the horse on the other end. It might be conceived that the water in the trough remains stationary. In one sense there is a trough of water there continually, but in the true sense there is a continual change in that water in the trough.

Passing now to Exhibit 17——

Mr. Miller: Before we pass to Exhibit 17, Mr. Crunden; Column 8 represents the amount set aside for depreciation each year?

The Witness: Yes, sir.

Mr. Miller: Now each year when that money is set aside, whether it is retained in money or invested in property, it earns, does it not; it should earn?

The Witness: It should if the owner of that amount is a live person.

Mr. Miller: So that at the end of 25 years you not only have your $30,000.00 but you have what has been earned on that money, whether it is in the form of money or property; is that right?

The Witness: Yes, sir, certainly you would; but there is [fol. 8397] no question of earnings. This is the question of the mechanics of the reserve depreciation account.

In Exhibit 17 is shown graphically the net investment in the cars and a line is imposed upon the columns representing the net investment, which shows the growth and diminution of reserve for accrued depreciation. While the property is growing the reserve account is growing. While the property is stationary the reserve account is stationary. And as the investment disappears the reserve disappears.

Complementary to that is Exhibit No. 18. Exhibit No. 18 shows the annual expense of depreciation in dollars and the annual realized depreciation. The annual realized depreciation is shown by columns, and the true annual expense of depreciation by a ball and chain effect.

Exhibit No. 17 shows the balance sheet aspect of the problem, and Exhibit No. 18 the income statement aspect.

You will notice that the curve of the annual expense of

depreciation follows precisely the curve of the net investment shown on the other exhibit, whereas the annual realized depreciation does not so conform. There is no annual realized depreciation at all during the first four years. Commencing in the fifth year there is such depreciation, equivalent annually to the value of one car. Commencing with the tenth year the annual depreciation increases to $2,000.00, equal to two cars, and that continues until the 19th year inclusive. That is to say, it continues for some years after the investment has started to decline. You [fol. 8398] will notice that in the 24th year there is a charge for annual realized depreciation of one car, that being the last car of the entire series.

Now that exhibit shows that without the avoidance of any of the necessary expense of depreciation there is, in the showing made by the annual realized depreciation as compared with the annual expense of depreciation, a displacement, so to speak; that is to say, if dep-eciation were charged in accounts on the basis of the annual realized depreciation, it would be charged too late.

The expense properly charged, which would be charged as the annual expense of depreciation, is shown by the ball and chain line on this exhibit. There are certain shortages, so to speak, created by the treatment of annual realized depreciation which make the amounts, as compared with the annual expense of depreciation, small during the period that the property is increasing in size. When the property becomes temporarily static the amount of the annual expense of depreciation and the annual realized depreciation become equal. When the property commences to decline in amount, the amounts which were created as shortages in the early years appear as overages in the later years.

That is to say, if the books were kept on the basis of annual realized depreciation, the charges for depreciation in such later years would be heavier than they should be and very burdensome.

Exhibit No. 19 shows the true annual expense of depreciation, consisting of a dotted line, expressed as a percentage [fol. 8399] of the plant in service. You will notice that it is very consistent. It remains fixed on the 20 per cent line throughout the whole term.

The annual realized depreciation is expressed as a percentage of the property during the several years, and the progress of this percentage curve is extremely erratic. It

is zero for four years, jumps with abruptness to 20 per cent, then fluctuates through a wide range through the twentieth year, and then runs rapidly up to 100 per cent in the last year. The 100 per cent of the last year is of course due to the fact that there is only one car in service the last year, and that car goes out of service that year, and you divide a thousand dollars into a thousand dollars, giving you 100 per cent.

Exhibit No. 20 is helpful, I think, to some extent in making clear what is going on. It shows you several cars, the original and replacing cars, expressed by black blocks, and the blocks are numbered to conform to the numbering scheme shown on Column 2, 3, and 4 of Exhibit No. 16.

Wherever there is a break in the column it shows that at that point there is realized depreciation on a car at that moment going out of service, and the thought of the exhibit is this, that if you follow down from north to south, so to speak, on that chart, at any point where you see a break in the manner I have described, you will see that the realized depreciation represented by the cars that go out of service does not represent the proper charge for depreciation, because there are other cars which remain in service at that [fol. 8400] same time and for which no break appears.

For example, take the eleventh year. In that year Car 1-b goes out of service, and if you keep your books on the basis of annual realized depreciation a charge for that car would be placed in that year. But car 2-b does not go out of service in that year. It remains in use, and yet it is being used by the taxicab man in his business and it is depreciating.

Similarly, Car 3-b and Car 4-b etc.

Now the condition to which I am referring is dangerous, the misunderstand- which I refer to here, which is in the minds of a good many people, is dangerous, particularly when the plant is increasing in size or decreasing in size. At such times the amount of the annual realized depreciation is no criterion whatever to the true annual expense of depreciation.

I have another exhibit which will make the last mentioned point I think very clearly indeed.

Mr. Burr: The chart on the Exhibit may be marked Crunden Exhibit No. 21, and is offered in evidence.

Thereupon the chart above referred to is marked for pur-

poses of identification and is offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted, marked Crunden Exhibit No. 21 and made a part hereof.

Mr. Shuler: Does this still refer to the taxicab business? [fol. 8401] The Witness: No, this does not. I will explain this in a minute, Mr. Shuler. It would apply to the taxicab business but this particular illustration does not tie up with it.

Mr. Shuler: I thought not, because it is a difference in percentages.

The Witness: Yes, sir. The present Exhibit No. 21 is entitled "The effect of plant growth on annual realized depreciation, 5 per cent, 10 per cent, 20 per cent annual rates of growth."

You will recall that when we were talking about Exhibit No. 13, Table B, which gave an analysis of entries passing through the depreciation reserve account, that I brought out the fact that the reserve was small where there was a very considerable proportion of new plant. When the group of units about which we were then talking was in the situation of being quite new, the reserve was small. It gradually built up as the plant grew older until the point was reached where so many of the items began to pass out of service that the charges therefor caused the reserve account to diminish, and from then on it diminished steadily to zero.

Now Exhibit No. 21 is interesting in that connection. It shows annual expense of depreciation at the rate of six per cent on the investment. That is, of course, an assumption. That does not apply to any particular plant, or the Ohio Bell plant. That is not the intention. All that is, is [fol. 8402] illustrative merely.

Q. Now let us assume that the plant is growing at the rate of five per cent per year. Then as to the plant that was placed in service last year you will have no realized depreciation because the plant is new. All the realized depreciation that you are likely to have in that year will be in respect of plant that is older than one year. Still that plant will be depreciating so that it will be reflected in the six per cent line representing the annual expense of depreciation, but will not be represented in the line which shows the annual realized depreciation expressed as a percentage of the plant of the same year. The result of that

is that the annual depreciation when a plant grows five per cent a year falls at a line lower than six per cent. As a matter of fact it falls somewhere a little over 4½ per cent. Now when the plant grows ten per cent a year that condition is accentuated, and without explaining it more fully I will simply draw attention to the fact that it drops down now to the neighborhood of 3¾ per cent.

Mr. Shuler: Can you in a few words explain why that is?

The Witness: It is because you have something in your divisor for which you have no complementary result in your dividend. That is to say, you are dividing old plant upon which realized depreciation—you are dividing old plant constituting a group for the depreciation of a portion of which there is realized depreciation during the period [fol. 8403] under consideration—no, I have got mixed up on that long, involved sentence. Suppose I start again. It is hard to state a thing like this. That is why I brought the charts along because I think they do it better than I can.

Let us conceive that the telephone plant is placed on two sides of the street; and the older plant is on one side of the street and that the plant built yesterday and day before yesterday and of very recent date, is on the other side. On this side, which represents the older property, property is daily coming out of service, and its useful life has expired. Then you will have here what I call realized depreciation. Now if you divide the original cost of that property which is involved in the realized depreciation into the amount of the loss constituting the realized depreciation you will get a true depreciation percentage. But if you use as your divisor all of the plant in that telephone company, regardless of what side of the street it is on, you are going to reduce your percentage, are you not?

Mr. Shuler: Sure I get it now.

The Witness: That is what this thing is intended to bring out. It is sometimes said that annual realized depreciation is a function of the rate of growth. That is a very loose statement that would not be mathematically sound. There is no such true function.

Mr. Shuler: It is just simply because the business is larger that it is less?

The Witness: It is because it is growing. It is tem-

[fol. 8404] porarily less because you are getting today the realized depreciation on the plant of years ago.

Mr. Shuler: Would this be a fair illustration, Mr. Crunden; assume that the realized depreciation on the old plant is six per cent and the realized depreciation on the new plant is three; six and three are nine, and a half of that is four and a half?

The Witness: In this illustration here we are assuming that the true rate of depreciation remains stationary. These are simply units of plant.

Mr. Shuler: I am talking about the realized depreciation.

The Witness: Then I di- not understand your question entirely, Mr. Shuler. Will you repeat it?

Mr. Shuler: Suppose that the realized depreciation of the old plant is for a certain year six per cent and the realized depreciation of the new plant for that particular year is three per cent; then the realized depreciation on the whole plant would be one-half of six and three, or the one-half of nine, which is four and a half. Is that the reason why the second line is lower?

The Witness: If I understand your question clearly that is the reason. Let us assume that the true annual per cent of depreciation is six. Now because some certain property is older you are getting the full effect of its depreciation. Because other property is new there are only some of the very short life members that have come out of service, if any, and therefore as to those you get temporarily only a [fol. 8405] portion of the depreciation you are going to get. And I think your way of putting it is perhaps a very good way to understand it.

Mr. Miller: Mr. Crunden, these lines of annual realized depreciation would rise with a less percentage of extension or addition of new plant, wouldn't they?

The Witness: Yes, sir.

Mr. Shuler: That is the way I understand it, and I think I have it clearly in mind, and the more of new plant that is put in the more they would drop down?

The Witness: Temporarily.

Mr. Shuler: Yes, certainly; I think I understand it.

The Witness: Yes, sir.

Mr. Snook: Mr. Burr, might I ask a question?

Mr. Burr: Yes, Mr. Snook.

Mr. Snook: Mr. Crunden, referring to that Crunden Exhibit 17, I wonder if we could tie those together a little bit.

It seems, according to the diagram, that when the investment becomes static, that is, as much goes in as comes out, the reserve for accrued depreciation also stays static. That is, it stays at the same amount, according to this diagram, in rather a definite ratio.

The Witness: It does providing, of course, the depreciation characteristics of the plant remain unchanged.

Mr. Snook: As I get it, this condition is illustrated by the line at the top, providing six per cent is the correct depreciation. Now, referring to Exhibit 21, take from 10 to [fol. 8406] 16 on Crunden Exhibit 17 is illustrated by the top line of Chart 21, is it not?

The Witness: Yes, the theory on which those lines, headed or called "Annual expense of depreciation, are based is the same in all the exhibits. That is your point, as I understand it?

Mr. Snook: No, I mean as a matter of illustration, provided these charts are based on the same figures and same conditions, then that portion of the chart Crunden Exhibit 17, which would lie between 10 and 15 years inclusive, would be shown by the depreciation rate of six per cent, or the top line on Crunden Exhibit 21?

The Witness: As I understand you, yes, sir.

Mr. Snook: And the other figures would vary according to conditions?

The Witness: According to the rates of growth.

By Mr. Burr:

Q. Reviewing something I asked you yesterday, let me ask you, Mr. Crunden, whether the Ohio Bell Telephone Company, through the General Staff, is accorded or is given the benefit of the results of the investigations illustrated in these charts and by your answers to the previous questions?

A. Yes, we act as consultants of the associated companies on all of these accounting and mathematical questions.

Q. Has the American Telephone & Telegraph Company furnished in the past few years financial assistance to The Ohio Bell Telephone Company?

A. Yes, sir.

Question objected to by Mr. Shuler.

[fol. 8407] Q. Will you please describe what that assistance is?

Mr. Shuler: I object.

Commissioner Maullar: Well, if this witness knows, it is proper.

Mr. Shuler: That is the point. I would like to know how this witness knows about the finances. I am very much interested, if he knows enough.

Commissioner Poor: The question in form is not good. Objection sustained.

Q. I will put the question this way. Do you know to what extent The American Telephone & Telegraph Company has furnished financial assistance to The Ohio Bell Telephone Company in the organization of the latter company?

A. What do you mean by the organization of it? Does that go away back to the beginning of things—this new corporation here now?

Q. No, I was only going to consider The Ohio Bell Telephone Company from its organization by reason of the consolidation of the former Ohio Bell Telephone Company and the Ohio State Company?

A. When was that?

Q. That was September, 1921, and I only use that date so as to give you some guidepost for your answer.

A. Yes. I am familiar with that in a general way because I see vouchers passing through the office, and correspondence from time to time, and hear people talking about it, and in order that I could give some intelligent information on it I obtained from the books of the American [fol. 8408] Company these certain figures of the actual amounts that we have advanced to the Ohio Bell Company during the last three years.

Q. You may state what they are?

A. May I answer your original question there? Is there a question pending?

Q. Yes, if you want to add anything to that before testifying as to the actual amounts?

A. I thought I might read that paragraph of the License Contract which tells what the assistance is of which the Ohio Bell can avail itself.

Mr. Shuler: Doesn't that speak for itself?

The Witness: So that we can get at this point we are talking about.

Mr. Burr: The contract is in evidence, but you are permitted to read — into the record — you want.

The Witness: I do not want to waste any time, but this shows what we are talking about and is one of the matters of service furnished:

"Advice and assistance in any financing required to be done by the licensee in the extension, development or improvement of its telephone system within its said territory and in the general matter of its finances; aid in securing funds on fair terms as and when needed for new construction and other expenditures, but at no time to a greater extent than the then finances and credit of the licensee may permit; active assistance in the marketing of the licensee's securities; and such other necessary financial support and assistance in the premises as will tend to serve the best interests of both companies."

[fol. 8409] Answering your other question, the principal assistance that the American Company has furnished during the past three years has been to itself loan the Ohio Bell Company the money which it needed. The Ohio Bell Company would——

Mr. Shuler: I object to that statement. What does this gentleman know about how much money the Ohio Bell Company needed?

Mr. Burr: He is perfectly competent to answer that.

Commissioner Maullar: If he knows what the transactions are between the parent company and the Ohio Bell.

The Witness: I assume there, Mr. Shuler, that nobody would ask for money which they did not need.

Mr. Shuler: But they may have needed more and the A. T. & T. would not give it to them. That is the point.

The Witness: From my general knowledge of the size of the construction program of the Ohio Bell Company I would say that the money that they did receive was sufficient to carry out their program. You see the whole thing is interrelated, the size of the program, the number of employes, the burden on the supervisory staff, the amount of materials and supplies that can be purchased from various manufacturers and the amount of plant required by subscribers, and the amount of money which can be obtained

in the market for the development of utilities. It is one grand problem.

The amount which was advanced by The American Telephone & Telegraph Company to The Ohio Bell Company during 1921 was $3,661,000.00. During the year the Ohio Bell repaid $266,000.00 of that amount.

[fol. 8410] Mr. Shuler: What is that?

The Witness: $266,000.00.

In the year 1922 the A. T. & T. advanced $5,050,000.00, of which the Ohio Bell repaid $1,700,000.00.

And in the year 1923 the A. T. & T. Company advanced $4,600,000.00, of which the Ohio Bell repaid $2,864,000.00.

Q. Making the net indebtedness what?

A. I haven't the exact figure at the end of December, 1923, but I believe you gave it in round numbers this morning somewhere in the neighborhood of 11 or 12 million dollars.

Mr. Shuler: This would show, wouldn't it?

The Witness: No, because there is an old indebtedness carried forward from the time of the Cleveland Telephone Company of some nine million dollars.

Mr. Burr: It shows in Company Exhibit No. 2.

The Witness: I was just stating the annual transactions for those years.

Mr. Shuler: That is the reason I objected to the question and the answer—your answer is misleading.

The Witness: It is a technical objection, yes.

Mr. Burr: That report by the way may be marked Company Exhibit No. 2, and we reoffer it in evidence, although it has been offered before.

And thereupon the Paper Writing above referred to was marked for purposes of identification, and the same was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked [fol. 8411] Company Exhibit No. 2 and made a part hereof.

Mr. Shuler: You have no more of them?

Mr. Burr: No, but we will be very glad to supply you one, Mr. Shuler. It has been rather difficult to anticipate the copies that would be required of all of these exhibits and although we have already used up one or two trunks full——

Mr. Shuler: I will testify to five.

Mr. Snook: I was not here when Company Exhibit No. 2 was introduced.

Mr. Burr: That is the report.

The Witness: Upon Page 10 there is a statement of the balance sheet, which shows, under the heading of "Debt", the item "Advances from System corporations, $11,415,-607.94." I know of my own knowledge that that closely approximates the amount of the indebtedness, but I cannot say that that is the amount at this moment.

Mr. Snook: To what indebtedness are you referring?

The Witness: The advances which the A. T. & T. Company has made to The Ohio Bell Telephone Company up to December 31st.

Mr. Shuler: As I get it, that is supposed to be the net indebtedness at that time?

Mr. Burr: He does not say it is supposed to be. He says he knows it is approximately that amount.

Mr. Shuler: Put it that way. I don't care.

The Witness: The amounts in question have been loaned [fol. 8412] temporarily by the A. T. & T. Company at the rate of six per cent per annum, less two per cent for monthly payments. That is 5.88 per cent. And when I said that The Ohio Bell Telephone Company——

Mr. Shuler: How do you get 5.88?

The Witness: I mean that the accountant of The Ohio Bell Company takes——

Mr. Shuler: Two per cent of six per cent?

Mr. Burr: And that is .12 of one per cent?

The Witness: The Ohio Bell Company takes that discount if they prefer to pay the amount monthly instead of at longer intervals.

Q. Go ahead?

A. I said that The Ohio Bell Telephone Company repaid certain amounts during those years. Now our plan is this, that the Ohio Bell Company gives us brief notice of the amounts that it is likely to want in the immediate future, and we arrange to provide those amounts. If the Ohio Bell Company finds it is temporarily in possession of some money which it wants to use advantageously, it sends that money to the A. T. & T. Company and the A. T. & T. Company allows the Ohio Bell the same 5.88 per cent; the idea being that we can use the money better than the associated companies can, and in that way it saves interest to them.

The points involved in the service are that the Ohio Bell Company in the first place has been able to obtain money quickly whenever it has needed it. It has not been compelled to buy large sums of money in advance and having [fol. 8413] them lying somewhere awaiting the substantial part of the construction under the annual program.

The rate at which the money has been loaned, 5.88, is on its face very reasonable.

Q. Do you know the amount to be loaned by the American Company to the Ohio Bell Company for the current year 1924?

A. The Ohio Bell have notified us that they would like to get, during the year, at times that they will later decide, about $3,800,000.00.

I might say that in New York we carry a very large reservoir of cash for the purpose of meeting the needs of the associate companies. We carry as high as 90 or 100 million dollars of liquid assets which we obtain through the issuance of A. T. & T. Company stock and note issues, and this money is placed at the disposal of the associated companies as they need it.

Q. Will that amount you speak of, $3,800,000.00, be placed to the account of The Ohio Bell Telephone Company by the American Company during this present year?

A. Yes. The procedure will be that as the construction program matures and money is needed the treasurer of the Ohio Bell Company will send a monthly advice to the A. T. & T. Company of what he needs during the next ensuing period, and when he actually needs the money the chances are that he will telegraph for it and we will telegraph the money so as to save interest while funds are in transit. That is, we try to handle it in the manner which is the most economical, both from our standpoint and the [fol. 8414] standpoint of the associate companies.

Q. You say the chances are it will be forthcoming by way of telegraph. If not by way of telegraph, it will be forthcoming in some way?

A. It will surely be forthcoming unless some cataclysm of the most tremendous kind befalls us.

Q. Are you familiar with the cost of money to a company such as The Ohio Bell Telephone Company, Mr. Crunden?

A. Yes, sir.

Q. Will you discuss that phase for a moment?

A. You mean along broad lines, without getting into detail about the proposition?

Q. Yes?

A. Why, the situation is that there is only a certain amount of investment fund in the country upon which all investors can draw. That investment fund at the present time is somewhat larger than the average, due to the fact that at the present time business is not especially active, and the foreign situation is bad, and a great many foreigners have been buying our securities and sending their money to this country, to a place where they think it will be safe. And as a result of that—and this accords, I believe, with what Mr. Eaton said this morning—the investment market is comparatively favorable, somewhat more favorable than it is likely to be on the average, and more favorable than it was last year.

The Ohio Bell Telephone Company, acting as an independent company, or any public utility of that kind which did its own financing, would necessarily have to go to the [fol. 8415] investment houses or to some wholesale purveyor of capital to obtain the necessary funds for its additions.

The characteristic of public utilities which is most striking in this connection is the great growth of the utilities. I think we brought out here a couple of days ago that the telephone business has increased about a thousandfold since the beginning of the century, and similar tremendous growth has been experienced by other utilities; and they are all anxious to obtain capital, and they will continue to be so anxious, and the draft upon the amount of money available for investments will be very great.

I wonder if I have some figures on that? I haven't the figures that I thought I had here. But the total income—net income, of the United States in a year is about eight billion dollars, and of that amount you can figure on an amount very roughly stated at two millions going into the surpluses of partnerships and individuals and corporations, and disappearing without being reflected in the form of securities.

Then there is another sum that could be roughly stated at another two million, which goes into fixed improvements, such as into farms and into new buildings and things of that kind. That brings somewhere in the neighborhood of

four or four and a half billion dollars into the investment market.

Mr. Burr: Pardon me, I think you said millions in the beginning.

The Witness: That should be billions. That brings about [fol. 8416] four or four and a half billions into the investment market, and from that must be taken care of the needs of the governments, the municipalities, industrial undertakings, and public utilities.

If you will pardon a guess, based on my best memory at the moment, I think the draft of the public utilities upon the available fund last year was in the neighborhood of about one and one-third billion, which is quite a sizable sum.

Now when the public utilities go into the market to obtain money they have to compete like anybody else. There is no royal road to financing for any one, whether it is the A. T. & T. or whether it is some small corporation. They all have to stand the scrutiny of the people who have money to lend.

Of course the usual procedure is to go to such an institution as that represented by Mr. Eaton, an investment house, and the investment house has a corps of experts who scrutinize very carefully the kind of security you have to offer, and they are very careful about whether or not they will take your securities.

They in turn, if they decide to purchase the issue, have to peddle it out, so to speak, to the retailers, and the retailers in turn peddle it out through the bond salesmen who deal with the individual investors.

Now the bond salesman is very careful about what he sells, because his reputation depends on it. There are, of course, bond salesmen that are a little bit imaginative and are quite anxious to sell what they want to sell, but gen- [fol. 8417] erally speaking the bond salesman is a man of high grade and he has a personal clientele, and if the house with which he deals fails to provide the kind of securities which he thinks it is safe for his clients to handle, he is very liable to leave and take a considerable number of his clients with him.

Then there is the investor himself who is becoming better educated in these things, and he is coming to scrutinize ever more closely the increasing number of offerings which are placed before him.

When the public utility goes into the market and approaches the investment banker he must bear this test of comparison with industrial undertakings as well as with other public utilities. The competition with the industrial institutions is a very strong competition and there are several features which the public utilities have to meet, and which they cannot avoid.

The first one is one that was referred to, although not at length, by Mr. Eaton. He pointed out the fact that industrial institutions usually have a very large amount of liquid assets and usually the bond covenants of the industrial enterprise call for the keeping of the large part of the industrial assets in liquid form for the protection of the bond holders.

Sometimes we are asked why we cannot do that same thing. It is impossible for us to do that; speaking from the standpoint of public utilities when I say "our"—our plant is a fixed plant. It cannot be moved. It must be operated. [fol. 8418] What can we offer in place of that? Necessarily we must offer the assurance of continued earning power. Unless there is the assurance of continued earning power for which a large investment has been sunk in the particular locality it is impossible to obtain money for extensions except at a prohibitive rate, which means catastrophe for the enterprise or failure to render adequate service.

The prime thing of course is the assurance of continued earning power.

Another argument we have to meet is that the industrial enterprises have the ability, within the limits of course fixed by competition, *ot* increase prices for that product as they see fit. Of course they are controlled by market conditions, but the market is responsive to the situation as it exists from time to time. Prices change. What have we to offer in place of that?

We must have assurance to place before the investors that when it becomes necessary to increase prices from our standpoint or rates, as we may wish to call them, that the authorities should act promptly, with reasonable promptness of course. Nobody expects that the thing can be done in five minutes.

But it is going to give a detrimental aspect to this whole situation unless we can cure the great body of investors of

the feeling that the utilities are liable to be caught between the upper and nether millstone at various times.

Another argument we have to meet is, people would like [fol. 8419] to put their money in enterprises that can stop expanding when they feel like it. Industrials can stop expanding. If they don't wish to go into the market for more money and prefer a smaller business, they are quite at liberty to do as they please in that regard.

But the public utilities cannot stop expanding. They must give service to the public. They must continue to obtain capital for extensions and betterments. There is no offsetting argument to that. You must meet that condition. If you don't you fail.

Then there is the fourth situation which from the investment standpoint must be considered and in some parts of the country it is more or less serious, and that is what you might call the civic interest in this matter.

The utility company is one side of a bargain. On the other side there are the subscribers to the service and the users of the services of the utility. And naturally they want to make the best bargain they can from their end.

Now if there is protracted litigation and particularly if there is bad feeling, then the investor shies right off the whole proposition.

From the investment market standpoint the main thing is confidence between the utilities and the communities which they serve.

It appears to me that it ought to be so that when the local Chamber of Commerce or any other body, as well as the [fol. 8420] generality of individuals, think of a public utility, that they think of it as they would of any large enterprise in the community of which they had a right to be proud. That is, the Chamber of Commerce will boost the manufacturer of woodenware or bedsteads or anything that helps develop the prosperity of the town.

And looking at it as a long-range proposition, as something we ought by all means develop into if we haven't done it already, we ought to have that same feeling towards the big institutions that share a great part in making the town prosperous.

And the way to do that on the part of the utilities is to come in frankly with the facts and lay the facts on the table and to cooperate by doing their part, to ask nothing that is

unreasonable and to keep their books of account in such a way that when you want to know what the facts are you can get them speedily and courteously. And they must cooperate of course by rendering the best service that they can.
[fol. 8421] Mr. Shuler: The last statement I particularly agree to and recommend to your company.

The Witness: Well, that is the investment market situation and I believe it covers all of the principal points, Mr. Burr.

Mr. Shuler: Now on that last point, I want to accentuate my approval. Will the A. T. and T. Company lay their cards on the table in this case and willingly furnish an accurate account of the receipts and expenditures under the four and one half per cent contract, so that the Chambers of Commerce of the various cities in the State can feel that they can go forward realizing that they are getting fair treatment and good service and reasonable rates—They can go forward and locally boost public utilities, particularly the Ohio Bell Telephone Company.

The Witness: Are you addressing me or Mr. Burr?

Mr. Shuler: You.

The Witness: I thought Mr. Burr had covered that question the other day.

Mr. Shuler: He has absolutely refused to cover it. Answer my question will you. Read it will you.

(Question read.)

The Witness: You understand, Mr. Shuler, that I am here in the same capacity as Mr. Rhodes is, that is to say, my work has to do with methods, financial and accounting methods, and that work I have explained. I do not keep the books of the American Telephone and Telegraph Com-
[fol. 8422] pany and I am not at all certain in my own mind whether the matters that are referred to are germane to this proposition. But at any rate it seems to me that that is a question that should be addressed to Mr. Burr, not to me.

Mr. Shuler: Then personally you feel that you should only lay on the table such cards as you employees of the A. T. and T. think the people should have.

Mr. Burr: He has not said that at all.

The Witness: No, I have not said that. There is no use giving that sort of twist to it. If the information was

germane to the proposition, you should receive it. But if it is not germane, then there would be nothing gained by producing it.

Mr. Shuler: Very well, I will take your answer on it. Who is to decide whether or not it is germane, the A. T. and T. Company or the public.

The Witness: Mr. Shuler, that seems to me to be bordering on or to enter into an argument with the witness on a subject with which he is not conversant. I have tried to keep to those things I know and not wander all over the map.

Mr. Shuler: Mr. Condon you said that the Chambers of Commerce should boost public utilities.

The Witness: I do. I think not.

Mr. Shuler: And that the public utilities should be fair and lay their cards on the table.

The Witness: Just *have* you have endorsed that I re- [fol. 8423] endorse it, Mr. Shuler.

Mr. Shuler: And I use your own words. Now you have shown a somewhat extensive knowledge of the financing of the A. T. and T.; you have shown somewhat extensive knowledge of where they spend their money, what they do with their money?

The Witness: Yes, sir.

Mr. Shuler: Now it is just inconceivable to me that if you are here expressing A. T. and T.'s public policy ideas that you cannot get back to A. T. and T. and get from them the things I have asked you to get when you again come here and tell us you have gone through their records and given us the amount of money they spent or loaned you in Ohio.

The Witness: Well, I have given you information from figures that come before me, and I am not in position today to give you information about figures with which I am not familiar.

Mr. Shuler: I realize that. But will you give them to me within two or three weeks or a month?

Mr. Burr: Do you even know whether such figures are available, Mr. Crunden?

The Witness: I know the figures we file with the Interstate Commerce Commission at Washington are available. They are general figures. I do not know whether they are split up in categories that will be useful to Mr. Shuler.

Mr. Shuler: No, they are not. That is the idea I want [fol. 8424] to express. But you do know, Mr. Crunden, that Mr. Gifford furnished to the New York Public Service Commission these figures for the years, 1921 and '22 do you not?

The Witness: Yes, I remember seeing that at the time. That was one of two occasions on which I saw such figures.

Mr. Shuler: The next question; you also know that Mr. Gifford issued those in somewhat an allocated shape by several exhibits.

The Witness: Yes, sir, he did.

Mr. Shuler: Why can't you do that for the Commission in Ohio? You do not play favorites among the commissions do you? Let me ask you another question.

Commissioner Maullar: Lets see. He has'nt answered your last question.

Mr. Shuler: Why can't you favor the Ohio Commission by furnishing them the same material and evidence that you did the New York Commission.

The Witness: That seems to be addressed to me as if I were one of the executives of the Ohio Bell Company or the American Company.

Commissioner Maullar: You may state whether or not that is within your authority.

The Witness: I am simply a methods man, coming here to tell about a portion of the work that I perform.

Mr. Shuler: My only objection is the gentleman comes here and lectures Ohio Chambers of Commerce for not [fol. 8425] being fair to his utility.

The Witness: No, emphatically no. I must protest against that even to the extent of being discourteous. I am talking about a country wide situation.

Mr. Shuler: Ohio, in connection with other states of the Union.

The Witness: No, not any states of the Union, but I am simply telling you what I know is in the minds of the investor. I am not going to give you my own ideas. I cannot be construed to lecture you. God forbid! But I want to put the facts as I see them in the record when I have been asked to. I have not exaggerated the thing at all and I do not think I have stressed the thing unduly.

By Mr. Burr:

Q. Nor do you state that any Chamber of Commerce has been unfair in the matter?

A. I think generally in the past few years they have been fair and I think they are beginning to see into this proposition from the investor's viewpoint. Let me elaborate on that a little.

Mr. Shuler: Why? Why take the time.

The Witness: It is simply this. It is quite an important point.

Mr. Shuler: Maybe you can tell us quicker than you explain what I asked you.

The Witness: We have got to rely—When I say "we" I mean public utilities, generally—On Mr. Average Man for the money in the average public utility. We cannot rely [fol. 8426] upon the rich, because the rich are relatively speaking a negligible quantity in providing funds enough for industrial developments or at least for public utility development. Every time that we put out an issue we have very small amounts taken by great numbers of people over an extended area. Consider for a moment our experience in the war. The way the Fourth Liberty Loan went over was an eye-opener to financial men throughout the country.

Mr. Shuler: Oh, gee, we read all of that stuff.

The Witness: And we must get our additional funds in that same way from a vast number of investors.

Mr. Shuler: Widows and orphans?

The Witness: No, not widows and orphans necessarily. We must sell our securities to insurance companies in which tens of thousands of people are interested. We are making a strenuous effort to get Bell issues which can be carried by savings banks; we are trying to sell preferred stocks to customers; and nothing could be done that is better than this idea of customer ownership. It is a splendid step in the right direction.

By Mr. Burr:

Q. How many stockholders are there in the American Company?

A. Why let me see. I think I have that.

Mr. Shuler: Is that all of value on the four and one half per cent contract.

Mr. Burr: I thought the Commission would be glad to have this evidence.

[fol. 8427] The Witness: At December 31st, 1922, there were 249,600. I do not know how many it is today, but I know our people feel that the day is not far distant when there will be a half a million.

Mr. Harshman: What does that represent? Owners of preferred stock?

The Witness: No, that represents stockholders in A. T. and T. company stock.

Mr. Harshman: Preferred and common both?

Mr. Shuler: They only have one.

The Witness: That is the common.

Mr. Harshman: Common American Telephone and Telegraph Company stock.

The Witness: Yes, you understand our general line of thought in the Bell system. Our plan is this, that the A. T. and T. Company should be the foundation structure of the whole business, and that they should issue common stock. Then they also obtain funds, borrow money and advance that money to the local companies for use. With the money that they obtain, they also purchase the common stocks of the local companies. From time to time when there is a considerable amount of property that has been accumulated in the plants of the local companies, that is not covered by bond issues, favorable opportunities are taken to float first mortgage issues on those properties, and until a favorable opportunity comes to extend the amount issued under such first mortgages, we aid the associated companies in obtaining the money on the best terms, usu-[fol. 8428] ally by this proposition of advances. Then the common stocks of the local companies go into the hands of the American Company and are made collateral for bond issues and note issues on which we obtain money in the New York Market for the further use of the associated companies, and back of the whole thing stands the common stock of the American Company. It is a much better stock than any common stock of a local telephone company could possibly be for this reason, that investors in general do not like to place too much of their eggs in one basket. They distribute their risks in the same way in-

surance companies distribute their rates, and no one ought to own more than a moderate amount of any one stock. He ought to distribute his holdings if he is wise. The A. T. and T. Company because of its country-wide nature and country wide extent of its service is not putting your eggs in one basket but is equivalent to putting them in a multiplicity of little baskets throughout the country, and it furnishes that tremendous stability of which Mr. Eaton spoke.

Q. Do you know how much the American Telephone and Telegraph Company paid for its common stock of the Ohio Company that it owns?

A. I don't know.

Mr. Shuler: I object to the question.

Mr. Burr: That is a matter of record before the Commission.

Mr. Shuler: You know this testimony I have been speaking about of Mr. Gifford was given before the New York [fol. 8429] Commission.

The Witness: Yes, sir, I read it.

Mr. Shuler: You know after that hearing and having heard and having been given that information they reduced the four and one half per cent contract to a $2.10 per station base did they not, if you know?

The Witness: I am not positive about the amount, but it was some such proposition.

Mr. Shuler: $2.10. Take my word for it.—No, $2.00; one dollar for the instrument and one dollar for the other service.

Mr. Burr: Who did that.

The Witness: That was the case that subsequently went into the Federal Court.

Mr. Shuler: That is what happened?

The Witness: Some such action as that, yes, sir.

Mr. Shuler: You know in Indiana they had certain information didn't they, or are you not familiar with that case?

The Witness: No, I am not with that.

Mr. Shuler: Are you familiar with the Michigan case.

The Witness: Yes, I have some familiarity with the Michigan case.

Mr. Shuler: What did the Commission do there after hearing this evidence?

The Witness: They did various things, the result of [fol. 8430] which was we went into the Federal Court.

Mr. Shuler: No, I mean on the four and one half per cent contract. Please answer the question.

Mr. Burr: Just a moment.

Mr. Shuler: Is asked him what the Michigan Commission did on the four and a half per cent contract after hearing this evidence. He may answer if he knows. If he does not he can say, "I don't know."

Mr. Burr: Mr. Shuler, you know quite well that the best evidence of what the Michigan Commission did in that case is to go to the record of the case and prove it here and not ask the witness for the telephone company as to what the Commission did or did not do in that case.

Mr. Shuler: And Mr. Burr, I equally know that the best way to get the record of the loans made by the A. T. & T. Company to Bell is the books of the A. T. and T. Company, and not allow this man to testify to it.

Commissioner Maullar: We are getting far afield. If the witness knows he may answer the question. If he doesn't he can say he doesn't know.

The Witness: I don't remember what the decision was in that regard. I know that they made some strictures regarding the method of making the payment.

Mr. Shuler: If he does not he can say he does not know.

The Witness: I do not know what the decision was in that regard. I know that they made some strictures re- [fol. 8431] garding the method of payment.

Mr. Shuler: That is all.

Mr. Miller: Have you access to the books of the A. T. and T?

The Witness: No, sir.

Mr. Miller: You had access to get the amount of the loans made to the Ohio Bell?

The Witness: Yes.

Mr. Miller: Can't you get access to get this other information which has been asked for?

The Witness: I was directed by the comptroller of our company to get this information for this case. Otherwise I would not have gotten any such information.

Mr. Miller: You did that under his authority?

The Witness: Yes, because my work does not go to that feature of the work of our department.

Mr. Shuler: Mr. Crunden, do you know whether or not the person in charge of those accounts has the same views as to laying the cards on the table as you have?

The Witness: I think he has, yes, sir.

Commissioner Maullar: Oh, no, that is not important.

The Witness: I think it is the policy of the Bell system to give every publicity necessary and you won't find, Mr. Shuler, any corporation that issues more frank and full annual reports than the American Telephone and Telegraph Company. That has been our custom for years. [fol. 8432] Mr. Shuler: I like Mr. Vail's statement in his report of 1913, very much, but I am sorry they are not carrying it out.

The Witness: They are carrying it out.

Commissioner Maullar: Oh, gentlemen, don't argue.

By Mr. Burr:

Q. Mr. Crunden, will you tell us briefly what auditing work is done by the comptroller's department of the General staff for the associated companies?

A. We send traveling auditors to Cleveland and make an extensive annual balance sheet and income statement audit and a method inspection of the Ohio Bell Telephone Company regularly. We do that regularly each year. Last year it took two experienced men six months to do that work, and in the preceding year it took three men four months.

Q. Do the American Telephone and Telegraph auditors make the audit or do they assist the local auditor?

A. They made the audit. It is an outside audit so far as the auditor of the Ohio Bell is concerned. He does not get in on that work.

Q. How extensive is the audit?

A. It is quite an extensive piece of work. It is more extensive than the average audit would be by a certified public accountant, for the reason that our men are not merely good accountants, but they are also telephone men and they go with a fine tooth comb into whatever branch of the business they feel like.

[fol. 8433] Q. Have you the means of knowing what it

would cost the Ohio Bell Telephone Company to make such an annual audit with its own staff.

Mr. Shuler: I object to the question.

Commissioner Maullar: The question is if he has the means of knowing. The objection will be overruled.

The Witness: Well, I think that for the kind of men we sent out there, they charge $25.00 a day per person, and there would be six months work and there would have to be some overhead profit for the house that did the work.

Q. Why are such audits necessary?

A. They are necessary in the case of the Ohio Bell Company to insure that the accounting continues to conform in every respect with the accounting requirements of the Interstate Commerce Commission, and they are also necessary for general reasons, that is to say, to furnish the stockholders, the directors and the executives of the company with a correct statement of the condition of the business, and expert certification of its balance sheets for publication purposes and for the use of bankers and others who are interested in its securities. All companies of such standing have such audits. They are an indispensible feature of all such work.

Mr. Shuler: The A. T. and T. takes all the Ohio Bell Securities.

The Witness: I am answering in general. We do not hope that the A. T. and T. will continue to advance the [fol. 8434] money to the Bell forever. There must come a time when a good-sized first mortgage should be placed upon the property and the investment burden taken by the investors, preferably investors in Ohio.

By Mr. Burr:

Q. Does your department assist the associated companies in the selection of suitable accounting machinery and devices?

A. Yes, sir, we do that. In fact I brought a sample of that I think. In general our work along this line is the investigation of various devices made by different manufacturers for the purpose of recommending to the associated companies those devices which are mo-t suitable for their work. We receive inquiries from time to time from associated companies regarding the capabilities and pos-

sibilities of this machine or that, and usually we have already made careful investigation of it and are able to give them the information. If we haven't got such information we make the necessary investigations and tests to obtain it, and that is a regular feature of our work.

Q. Will you take just a single example?

A. This example that I brought along is a toll billing machine, that we recently recommended for the use of the associated companies.

I have two photographs of it.

Q. There are two photographs of it are there not?

A. Yes, sir.

Mr. Burr: The two photographs may be marked Crunden Exhibit Number 22 and Crunden Exhibit Number 23 [fol. 8435] respectively, and they are offered in evidence, the one marked Crunden Exhibit 22 showing the front of the machine, and that marked Crunden Exhibit Number 23, showing the reverse side of it.

And thereupon the photographs above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and are herewith submitted marked respectively Crunden Exhibits Numbers 22 and 23, and made a part hereof.

Q. Will you explain the two exhibits please?

A. These are photographs of a toll billing machine recently developed by my department, and it is designed to facilitate the work of preparing the statements furnished to subscribers. Upon the front view of the machine you will see a special bill shute that we developed which by an easy motion brings the toll statement to the point where the information is to be written. The machine is motor driven, and there is a tabulating arrangement which enables the machine to be worked in the most economical manner; that is to say, you write the date, and then the machine jumps to the point where the name of the town is to be written, and when you have written the name of the town, by striking the bar it jumps to the place where you insert the amount of the toll charge, and then it goes over to where you write the tax and the amount of the tax is included on separate keys which are shown at the [fol. 8436] righthand end of Exhibit 2. It says, "Tax

five cents" and "Tax ten cents," and you can strike the ten cents with one blow of the key. Immediately you do that the machine returns of itself to the point where you write the next, that is to say, it jumps up to the next line and also jumps back across the machine.

Q. In the same true of the ten cents tax key?

A. Yes, sir. At the same time there is an accounting mechanism there which enables her to tell the amount of the tax without adding it up.

Q. That is figure five?

A. Yes, sir. That machine has resulted in cutting down the time of doing the toll billing about 20 per cent, and the saving to the associated companies throughout the country is on the order of $150,000.00 for the year 1924.

Q. Are those machines in use by the Ohio Bell Company?

A. Yes, I presume they are. In fact I have no doubt that they are.

Mr. Shuler: He presumes they are. He has no doubt they are. He doesn't know a thing about it.

Mr. Snook: Does that machine accumulate the totals too?

The Witness: The totals of the tolls?

Mr. Snook: Yes, the totals of the bill.

The Witness: No, we find that that can better be done by comptometers, because there are only a few amounts to be added on each bill.

Q. Have you any bulletins illustrating the services [fol. 8437] rendered to the associated companies by your statistical department?

A. I think I have a few.

Q. We would like to have you produce if you please a few typical ones. Have you one containing frequency curves and averages?

A. Yes, sir.

Mr. Burr: It may be marked Crunden's Exhibit Number 24 and is offered in evidence.

And thereupon the bulletin above referred to was marked for the purposes of identification and is herewith submitted marked Crunden's Exhibit Number 24 and made a part hereof.

Q. Explain, Mr. Crunden, Exhibit 24 very briefly?

A. That bulletin had to do with the proper methods of determining frequency curves and averages. There is a large quantity of such work necessary in the Bell system. You will find examples of this in the bulletin. There are a number of examples for illustration which relate to the use of measured service. But the amount of such curves is extensive throughout the business. Now we found it desirable to issue that bulletin in order to show what kind of averages it was desirable to use in different kinds of mathematical work. Sometimes simple arithmetical averages are suitable. In other cases geometrical averages. At other times it is necessary if you are going to get correct results to use the harmonic means. And so on. And that bulletin has been helpful to the associated companies in that [fol. 8438] respect. It is typical of a class of bulletins that our statistical division puts out in that regard. Have you a bulletin showing the statistical analysis and projection of time series?

A. Yes, sir.

Mr. Burr: It may be marked Crunden's Exhibit Number 25 and is offered in evidence.

And thereupon the bulletin above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Crunden's Exhibit Number 25 and made a part hereof.

Q. Will you explain briefly Exhibit Number 25.

A. Exhibit Number 25 has to do with the projection of time series. We have found that with the very large investments which the Bell system has in telephone properties and it is very important to keep close watch on the ebb and flow of general business and the volume of production, and we are now studying the best ways of keeping that watch. I give this bulletin as an illustration of some of the work that is now under way. It is more or less of a tentative bulletin, and the advantage of it lies principally in the future. And its possible advantages are very great indeed, because if we can more accurately time the periods when great sums of money are required and if we can estimate with close accuracy the time when additional forces must be

[fol. 8439] trained in advance for construction projects, and if we can tell in advance the time when business is going to slacken up seriously, making it necessary to make radical adjustments in our forces, we can run the business most efficiently. It is also necessary to have such information in order to purchase huge quantities of materials at the right times. The whole subject is quite complex but considerable headway has been made with it, and there is no doubt but in a few years our information regarding it will be very much more expensive than now. To give you an idea of what I have in mind, turn to page 17 of the present exhibit. On page 17 is shown a chart Number 8, a comparison of originating calls and general business in terms of standard deviation.

I won't stop to explain standard deviation, because it is fully explained in the bulletin. You notice we have established a very close correspondence between the original calls and the curves of general business, and there is the peculiarity that the originating calls evidenced by the heavy line fall off, that is to say, in times when business is dropping off the number of calls falls off a little ahead of general business.

One of the outstanding facts of modern economic organization is the regularity with which periods of business activity and depression follow. Every period of prosperity seems to be followed sooner or later by liquidation, culminating in commercial crises and in some cases, as we remember, in 1893 in a panic. A period of depression is sure to [fol. 8440] be followed again by a business revival, and business revival is followed again by prosperity, and the cycle begins anew.

Now if we refer here to the year 1904 and the year 1905, the first stage of the business cycle is the state of revival. During depression costs of business have been lower and accumulated stocks have been worked off. Interest rates and prices have fallen and business activity is at a low point. Under these low cost conditions there usually develops a demand for some articles of stable goods, and this leads an activity in those lines, and this activity is followed in certain lines of business, which reacts on other lines of business, which, as they revive, react on still other lines, and thus gives the accumulated effect, profits increase with the increased volume of business, and as a result, business confidence returns. Eventually business men get courage

to embark on other projects and there is a feeling of prosperity. The second stage of that of prosperity, which you will notice is shown by the chart in the latter part of 1906 and the early part of 1907. In this stage confidence is very high, business is brisk, output expands, wages rise, prices of materials are pushed up, advanced prices of all sorts are cheerfully paid and there are higher costs incurred for overtime, the demand for money is very high and interest rates rise to their highest level. This vast business causes stresses and strains in the business organization. Prosperity usually has an adverse effect on business morale, [fol. 8441] speculation increases, conservatism decreases, and at length the banks and other creditors become apprehensive, lines of credit become restricted, demand decreases and the continuous volume of goods coming to market causes a surplus. This brings about the third stage of liquidation. Liquidation appears here in 1907 and again in 19-3 and 1914 and again in 1918. In this stage business concerns begin*g* to press hard their debtors for prompt payment. The credit strain becomes extreme and interest rates very high. Liquidation spreads throughout the whole business structure and eventually there is a crisis. The fourth period is one of depression. Crisis merges into depression, volume of business is low, prices fall, wages fall and as a result unemployment becomes severe, efficiency increases, cost of business decreases, failures are frequent. And then you start through the same cycle again as is set out on this exhibit toward a normal volume of production again.

The information on which we base the originating calls on Chart 8 has to be worked out from the information in chart 7, which shows the originating calls by months with their characteristic seasonal fluctuation and long term trend. We have to eliminate both the seasonal fluctuation and the long term in order to reduce them to a normal basis for comparison with some other index of the volume of business. This is work with which we are familiarizing the associated companies and we expect that over a term of years it will prove to be very valuable and make considerable [fol. 8442] savings for the associated companies. It is one branch of statistical work by which I illustrate the general nature of the work. I do not mean in offering this to offer it as our principal activity, but simply as one basis out of many in statistics which is a very broad subject and a sub-

ject which is greatly expanding at the present time. Concerns are getting so large that they can be operated better when they are large and can take advantage of large scale production——

Mr. Shuler: You are speaking of telephones now?

The Witness: And of statistics that are valuable aids to them.

Mr. Shuler: You are speaking of telephones when you make that statement?

The Witness: I was speaking of business in general and the necessity of dealing in the most efficient way with the purchase of large quantities of supplies and the provision for additional employment and foresight as to whether employment is going to fall off and so forth and looking forward to the future market for money and interest rates in the telephone business.

Mr. Harshman: Are the calls upon which these charts were based business calls or are they calls from both business and residence?

The Witness: I think they were all of the originating calls in that change, and those were calls in an eastern city. We have made studies of that sort for all kinds of other [fol. 8443] matters besides calls. I might say that we consider in the telephone business that our accounting and statistical department is not merely the fact gathering department of the business but also the fact distributing and the fact interpreting branch of the business, and we aim to have the general auditors and their associates of the greatest possible assistance to the executives.

Q. Did the American Telephone and Telegraph Company through its general staff assist the associated companies, including the Ohio Bell, in organizing an employees' benefit fund?

A. Yes, sir, they did. They worked out the general plan that was most desirable after a long investigation. I think Mr. Gifford did a large portion of the work on that investigation. We suggested to the associated companies the amounts that it was desirable for them to set aside out of surplus to start the employees' benefit fund, and the rates upon which charges should be made in order to maintain it. The American Company also started the fund and entered into an agreement with the associated companies that if the

associated companies would set aside at least two per cent of their annual pay rolls.

Q. For what purpose?

A. For the purpose of paying the employees' benefits in their respective companies, that should such amounts prove insufficient, the American Company would from its fund make up the deficiency but not to exceed one half million [fol. 8444] dollars per annu-. That gave the associated companies the necessary moral support to go ahead and institute the funds, and they feel that the American Company's funds are back of them, of their own, should they fail, and the introduction of the fund has had a wonderfully good effect on the employees.

Mr. Shuler: We have a compensation law in Ohio you know.

The Witness: Yes, sir, but you have no pension law for public utility employees in Ohio, I think, and no sickness benefits either.

Mr. Shuler: Yes, sir, if protracted, if contracted in the course of the business.

The Witness: But this covers any kind of sickness.

Q. Do you know whether the benefits payable under the fund are greater than those provided for in similar cases by the workmen's compensation fund of Ohio?

A. That is my impression from old days when I was auditor of disbursements of the Ohio Bell, but after this lapse of time it is nothing more than an impression.

Mr. Shuler: He does not know what we pay in Ohio.

Mr. Burr: He knew it as a fact at the time he was here in Ohio. I think that is all at this time, Mr. Crunden.

By Mr. Shuler:

Q. In your accounting department, do you pay any attention at all to cost of operation accounting?

[fol. 8445] A. Cost of operation accounting of the associated companies?

Q. Yes? Do you know and do you keep track of the per station cost of operation of the various subsidiary or associated companies?

A. Yes, we keep track of that, and also we make a great many other measurements.

Q. Just please answer my question. We can get along very nicely then. Do you know what the per station cost of operation of the Ohio Bell Company is?

A. No, sir.

Q. Do you know what the per station cost of operation of any other subsidiary on the American Telephone and Telegraph Company is?

A. No, I do not. I have no such figures with me.

Q. Do you acquaint various subsidiaries with the fact that one or the other is higher or lower?

A. We do, we issue a large amount of comparative data on various phases of the business.

Q. How does the direct station cost of operation vary with the size of the exchange.

A. There is a tendency for the expense of operation to increase as the size of the exchange increases.

Q. Take an exchange with one hundred thousand stations an exchange with one hundred and twenty five thousand stations and an exchange with one hundred and fifty thousand stations and an exchange with one hundred and seventy-five thousand stations, what should be the increase, the ratio of increase?

A. Oh, you couldn't get any such thing. You would have [fol. 8446] to study carefully the different exchanges and see what their characteristics were. One exchange might be a very big exchange and the other might be spread over a large territory and have a lot of farmer lines, and one town might be largely industrial and the other might be a community of farmers living in the town, without much industrial development. There are all kinds of things entering into that. Nearby markets for labor might have a bearing. If you are operating an exchange to Chicago and the people can go into Chicago and get better wages, they will go. And without carefully evaluating all of the elements in the thing, you are not going to get any answer worth while.

Q. You don't think there is any value in comparative studies of the different exchanges on that subject?

A. No, except in a very broad way. That is, if you had one exchange that was probably tremendously out of line it would put you on your guard.

Q. You are familiar now with the cost per station of operation of the various exchanges of the subsidiary com-

panies of the American Telephone and Telegraph Company are you not?

A. No, I am not familiar with that, except that we did have such information.

Q. Have you any idea what direction station cost from your experience in the doing of this kind of investigating—have you any idea as to what the per station cost is which you have in Cleveland, Ohio?

A. No, I have not. I would not go at it that way to work it out.

[fol. 8447] Q. What do you say?

A. I have not, and I should not go to work that way to get the information.

Q. What information?

A. Information bearing on the operations in Cleveland. I don't think you can divide stations into operations and get a figure there that is worth more than a general indication.

Mr. Shuler: That is all.

COLLOQUY

Mr. Burr: It is now almost closing time. I would suggest we suspend here rather than start with a new witness if that meets with the approval of the Commission.

Commissioner Maullar: Have you another witness?

Mr. Burr: Oh, yes, we have at least two more.

Commissioner Maullar: How much time will you take in direct on this?

Mr. Burr: We will want all of two days.

Commissioner Maullar: Can you be prepared for instance if we set three days in April—could you be prepared to proceed with your cross examination at the end of the direct examination of these two witnesses?

Mr. Shuler: If they will tell us what those two witnesses are to testify to.

Commissioner Maullar: I mean cross-examine those who have testified?

Mr. Shuler: Yes, I think so.

Mr. Burr: Your Honor will remember that the week of March 24th is also set aside for this case.

Commissioner Maullar: That is set.

[fol. 8448] Mr. Burr: My suggestion would be that in that week we go on with the witnesses which we have and that we

ask the gentlemen on the other side to be ready to cross-examine those who have already testified during that week.

Commissioner Maullar: That is a week set apart for something else.

Mr. Harshman: The week of the 24th is set apart for further evidence on the toll question, not on the four and one half per cent question.

Mr. Burr: My suggestion is we could make time by considering that say the first two days of that week or the last would be consumed in the testimony on the general toll valuation, general toll question, and that the last three days could be devoted to finishing our case and such cross-examination as you could get in at that time.

Commissioner Maullar: Will that be agreeable? Then we will set this for the following week.

Mr. Harshman: It will not be time for us to get a transcript so that we can be prepared for cross-examination. We are not going to be able to get that transcript for about three weeks. That is the way it usually runs. Sometimes it has been longer. It is going to take us some time to go over it, because there have been questions asked here and dissertations running on for fifteen or twenty minutes. It is a voluminous transcript. There isn't anything to be gained by setting a date now and finding we cannot fulfill it.

Commissioner Maullar: We will proceed as far as we can [fol. 8449] with the toll proposition at that time, and then there are two additional witnesses here for the company to be heard anyway. We can finish that. Possibly it would be only a remnant of your time to proceed anyhow.

Mr. Shuler: We might find at that time that we could go ahead with some of the cross examination. I think it is well to hold those days open, but not bind us as of that date for cross-examination.

Mr. Burr: Let me suggest this, that the week of the 24th be held as it now is and at that time the telephone company will finish its case in chief on all questions, including the license contract.

Mr. Shuler: And as I understand you, the first two days will probably be for toll.

Mr. Burr: For toll only, yes. I think that is about the way it will run. I should think the first two days anybody not interested in the license contract question need not be here.

Commissioner Maullar: Those interested in the four and

one half per cent contract, be here the last three days. Now I would like to have you agree on what date you want to continue this following that.

Mr. Shuler: You suggest something about the third, fourth and fifth of April, but that is too close.

Commissioner Maullar: We ought to be far enough along with the A. T. and T. four and one half per cent case that it could be completed on April 17th and 18th.

Mr. Burr: That is when the cross examination will take [fol. 8450] place. That will allow three days in addition to what you have at the end of the week of the 24th in cross examination.

Mr. Harshman: That will not get us anywhere because it is going to take a whole lot more time. Hadn't we better take a date when we have some assurance of completing it.

Commissioner Maullar: We have the calendar now that is marked up for weeks. We don't want to be all summer in trying these cases. We want to get an opportunity to get the facts before us so we can conclude these cases without unnecessary delay.

Mr. Burr: Then we have April 16, 17th and 18th?

Commissioner Maullar: No, the protest to the Akron valuation is on the 16th. That is on Wednesday. Well, one one of these dates I see the Barberton case is set, on the 22nd I think. Let us assign the week of April 21st. We ought to get time enough beginning at one thirty P. M. for cross-examining on the license contract testimony.

Mr. Burr: And for the introduction of testimony of the other side on that subject.

Commissioner Maullar: Yes, we might change Barberton to the following week, April 28th at one thirty.

Mr. Harshman: Then do I understand that this goes ahead on March 24th at one thirty.

Commissioner Maullar: Yes, 24th and 25th, complete the [fol. 8451] toll case, 26th, 27th and 28th complete the license contract in chief and any cross examination, and April 21st cross-examine on the license contract and in addition the testimony on the other side so far as it is possible.

Mr. Shuler: Before we adjourn I want to move for all of the cities who have been represented here, unless some of them want to object, that this Commission notify and direct that the Ohio Bell Telephone Company procure and present at a session of the hearing herein—and I will make that specific as of March 26th—The following information and data.

(a) The total receipts of the American Telephone and Telegraph Company under its sub-license contract popularly denominated the four and one half per cent contract, all telephone companies operating under and pursuant to the terms and provisions of such contract for each of the calendar years, 1919, 1920, 1921, 1922 and 1923;

(b) The total expenditures made by the General Staff of the said The American Telephone and Telegraph Company in each of said calendar years aforesaid, from the receipts under the said four and one half per cent contract; and,

(c) A detailed account of such expenditures by the said General Staff on the said American Telephone and Telegraph Company in the calendar year, 1923.

If however it is convenient to the American Telephone and Telegraph Company or the Ohio Bell Telephone Com-
[fol. 8452] pany to give us the year 1922 in a more expeditious manner—what I mean by that is, if they have it already for the year 1922—I will waive 1923.

If the Commission cares to hear any reasons I will state them in just a couple of words. Wherever these details expenditures have been exhibited, the Commissions have invariably said absolutely that the four and one half per cent contract was unscientific, illogical and unreasonable. Other commissions have said that without this data before them. But both recently the Illinois Commission have refused to lower the license payment beyond $2.10 per station, which is much lower than four and one half per cent, because the city had not shown the Commission the cost of this service to the American Telephone and Telegraph Company. All commissions are beginning to recognize and realize that that element of cost is a determining factor. And that is the reason we want to be in a position to show this commission what that cost is, so that this commission can intelligently arrive at some conclusion as to what the payment should be, rather than simply guess that because of mass formation of hundred and hundreds of pamphlets issued since 1889, as to what should be paid.

I do not want to state it as a fact, but I have a recollection that some of the courts have also said that they have not been given the cost of that service to the A. T. and T. But I do say it unqualifiedly, that in every case that the courts have allowed it, and in every case that the Commission has al-
[fol. 8453] lowed it,—if this Commission would go into those

cases, get a statement of the facts, you would find where it has been allowed, it has been allowed, not on the ground that a thorough investigation was right, but after hearing the A. T. and T's side of the case and nothing on the other side except perhaps a cross-examination, that the village or city had not made out a case to the contrary. Now it is absolutely essential for us to make a case to have this cost and these expenditures. I stated it as a fact today—the other day I did not—that in 1922—at any rate it will appear in the New York Commission's investigation—1922 I am certain—the receipts under this contract were seventeen millions of dollars and more, that of those receipts less than ten million were expended in this work. Now that is the statement of the company as I have it from these reports. Mr. Crum of Chicago has allocated this ten million dollar expenditure on a 50-50 basis. The reason I think I am stating the truth there is because it is verified somewhat by Mr. Crum's analysis of the A. T. and T. report to the Interstate Commerce Commission. Mr. Crum took that statement and analyzed it, and his and Mr. Gifford's statement do not vary very much on the amount expended by the A. T. and T. Mr. Gifford's statement of the amount expended in that year that he investigated was $7,750,000.00, and Mr. Gifford's statement my recollection is, is $9,900,000.00. Mr. Crum, after an investigation in an attempt to allocate the moneys spent that the advantage to the A. T. and T. of the $7,750,000.00 spent, [fol. 8454] the advantage that the A. T. and T. derived from it, was $3,775,000.00 and that the advantage which the associated companies, Bell Companies, received from it, were $3,775,000.00. And yet they are making the Bell Companies pay $17,000,000.00 in that year. And just as illustrative of what I have in mind and what we think this Commission should have in this case, in 1918 the Bell Companies in Ohio, exclusive of Cincinnati, paid into the A. T. and T. coffers $153,600 some odd dollars. In 1923 those companies paid into the coffers of the American Telephone and Telegraph Company $1,081,000.00. In five years an increase from $153,000.00 to a million eighty one thousand dollars.

Mr. Cooper: You are wrong about that.

Mr. Shuler: If I am, it is because your company has made a wrong report to the State of Ohio and the Public Service Commission of New York. Those are my authorities. Now just a specific instance. They had two companies, same number of zones, approximately. By a simple method

of unification 100 per cent more is turned into the coffers of the A. T. and T. Company under this four and one half per cent contract. How anybody can honestly and conscientiously justify that is beyond me. And besides all that 50 per cent of those 88,000 telephones in Toledo, the parts, were not furnished by the A. T. and T. Company. In Cleveland we have 165,000 stations.

Mr. Cooper: About, yes.

Mr. Shuler: Of which about 30,000 were originall[illegible] Ohio [fol. 8455] State. By the unification, which was done and paid for the benefit of the A. T. and T. and is a good thing I have no doubt——

Mr. Burr: For the subscribers.

Mr. Shuler: Because I always agreed that the telephone business should be a monopoly—we have there now a situation where they are receiving approximately one hundred thousand or more dollars—I am conservative—one hundred thousand dollars more paid into the coffers of the A. T. and T. Company, although thirty odd thousand of those instruments were never furnished by the A. T. and T.

It is just such illogical things as that that makes it perfectly plain that this four and one half per cent cannot be justified, simply because it costs somebody a few dollars more to keep the books. Because it costs a few dollars more to keep the books we are going to give to these A. T. and T people hundreds of thousands of dollars.

Besides, how can anybody justify this proposition? Prices, wages go up, the Ohio Bell Company asks an increase of rates. Why? Because they want to pay a living wage to some employee. This Commission takes it into consideration and says, "These people are entitled to more money". And every time you do it you are spending that much more money for the benefit of New York City.

Mr. Burr: Not a particle of it.

Mr. Shuler: You get the total revenues and off of the [fol. 8456] total revenue you get four and one-half per cent.

Mr. Burr: The question of the payment of a living wage does not affect the amount paid on the contract.

Mr. Shuler: Every time you raise your wages, you raise your rates, and every time you raise your rates you raise the revenue.

Mr. Burr: You are mistaken, Mr. Shuler.

Mr. Shuler: For that reason I make this motion and I think this motion should prevail and this Commission should

order that company to do what Mr. Crunden said, "Put your cards on the table".

Mr. Burr: First, your Honor, we are here in the midst of company's proof on that subject, and counsel's request, rather his demand, which has been made from time to time during this hearing and which is stressed so much, at this time is premature. In the second place, after the company has closed its case, we expect that it will have been shown in the evidence conclusively beyond even the possibility of argument that the Ohio Bell Telephone Company receives many many times the value, many, many times the cost, of these services to it. To use the figure which has been spoken of here from time to time, is that *that* the payments by the Ohio Bell Company to the American Company amounts to one million dollars a year, we expect to show that the value of those services to the Ohio Bell Telephone Company is many many times that one million dollars. What the commission is concerned here with is whether or not the Ohio Bell Company is getting value for the amount paid—services [fol. 8457] rendered. If it is receiving value, and I say it is receiving many times in the value of services, then the question of what it may cost the American Company to furnish these services is altogether beside the question. I do not care, however, at this time to go into that question at all. Suffice it to say that at this point where we are in the midst of our case and have yet to evaluate some of these services furnished by the American Company—when I say, "Evaluate" I mean evaluate them from the standpoint of the Ohio Bell Company, certainly the demand of the gentleman on the other side is premature.

Mr. Shuler: I have only one thing to say on that and that is this. I do not want to be in the position, Mr. Commissioner, of having them say sometime hence, six weeks or so, "My God, how do you expect us to get that together?" The Commission has indicated that it desires to close this case before the summer. And the purpose of making this motion at this moment is that I cannot be accused of waiting until the last moment to give them plenty of time to furnish it, and if they will furnish it within a reasonable time before the case is closed, I shall be content. But I do not want to be put in the position of having them say, "Well, why didn't you tell us this before". I want to give you plenty of warning, plenty of time to get the information.

Mr. Burr: There is only one thing other that I want to say

on this subject and that is I take exception to what counsel [fol. 8458] has said as to the proof on the subject of receipts and expenditures of the American Company under the license contract. He is altogether wrong, not intentionally so I am satisfied, but none the less obviously wrong in his understanding of the evidence on the subject. For one single example, in the New York Telephone case to which he has referred the testimony there on the subject showed that the cost of the services performed by the American Company under the license contract was in excess of the receipts from the associated companies paid to the American Company under the contract.

Mr. Maltby: Don't you think your motion would come better at the termination of the correct examination?

Mr. Shuler: I have no objection to that whatsoever. I am simply protecting myself and the cities of Ohio on the proposition that we have not caught them short. I will make the motion at the close of their case and give them notice now that I am going to make that motion then.

Commissioner Maullar: I think that is better. You withdraw the motion at this time. They have not indicated yet what will be their proof.

And thereupon the further hearing of this matter was adjourned to Monday Afternoon, March 24th, 1924 at one thirty o'clock.

. . . . . .

[fols. 8459-8579] *Monday Afternoon Session*

March 24th, 1924.

And thereupon the further hearing of this matter was resujed pursuant to adjournment.

Present:

Karl E. Burr and Charles S. Maltby, counsel on behalf of the applicant.

John M. Lewis, counsel on behalf of the State Citizens league.

. . . . . .

[fol. 8580] And also WILLIAM T. ANTHONY, called as a witness, on behalf of the Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. Please state your name.

A. William T. Anthony.

Q. Where do you live?

A. Cleveland, Ohio.

Q. What position, if any, do you occupy with the Ohio Bell Telephone Company?

A. I am General Traffic Engineer of the Ohio Bell Telephone Company.

Q. How long have you been connected with that company?

A. Since its formation.

Q. In September, 1921?

A. Yes, sir.

Q. Prior to that time what was your telephone experience, if any?

A. I entered the telephone business in March, 1913 as a student engineer with the central group of Bell telephone companies, with headquarters in Chicago.

Q. Did the central group include Ohio?

A. Yes, sir, the central group included the Chicago Telephone Company, the Michigan Telephone Company, the Wisconsin Telephone Company, the Cleveland Telephone Company and the three divisions of the former central Union Telephone Company.

Q. Including the Ohio Division?

A. Yes, sir, including the Ohio Division. In 1915 I was transferred to the Central Union Telephone Company, with headquarters at Chicago. In 1916 I was promoted to traffic engineer of the Indianapolis division of the Central [fol. 8581] Union Telephone Company. In 1917 I returned to Chicago as traffic engineer of the Central Union Telephone Company, which included in addition to the Indianapolis division, the Ohio division, the Illinois division and the down state Indiana division. In 1920 I was appointed General Traffic Engineer of companies that had formerly composed the Central Union Telephone Company, that is, the Indiana Bell Telephone Company, the Ohio Bell Telephone Company and the Illinois Division of the present Illinois Bell Telephone Company. In 1921 I was appointed General traffic engineer of the Ohio Bell Telephone Company.

Q. What is traffic engineering as applied to the telephone business?

A. Traffic engineering as applied to the telephone business has to do with the providing of methods and equipment for the handling of traffic, that is, local traffic and toll traffic.

Q. What do you mean by "Traffic?"

A. Well, by "traffic," I have in mind handling the calls originated by one subscriber for another subscriber in the same city or for another subscriber in a distant city.

Q. That is, the traffic as represented by your business consists of calls?

A. That is right.

Q. Are you familiar with the services rendered the traffic department of the Ohio Bell Telephone Company by the General Staff of the American Telephone & Telegraph Company?

A. Yes, sir.

Q. Who, if you know, develops the traffic engineering [fol. 8582] practices and the traffic operating methods in use in the territory served by the Ohio Bell Telephone Company?

A. A great many of them, I think most of the practices in use in the territory of the Ohio Bell Telephone Company, were developed by the General Staff of the American Telephone & Telegraph Company.

Mr. Shuler: I move that it be stricken out as too indefinite and uncertain. It doesn't mean a thing.

Commissioner Poor: It may go in for what it is worth. He says a great many and he thinks most of them. A great many is somewhat indefinite.

Mr. Shuler: If they had three and they received two from the A. T. & T., that would be the most.

The Witness: I can enlarge on that a little. In my judgment the American Company has developed over 90 per cent of the traffic engineering practices that I personally use in my business.

Q. Is that Traffic Department of the Ohio Bell Telephone Company organized to do this work for itself?

A. No, sir, we are not organized to do this development work for the reason that it is furnished by the American Company and it would be a duplication of work on our part if we were to organize and endeavor to do it.

Q. In your judgment could your company maintain under any reasonable conditions a traffic department which would be productive of the development of traffic engineering practices heretofore developed by the American Company [fol. 8583] for your company?

Mr. Dotson: We object your Honor. It is purely an opinion and issue cannot be tried upon opinion if this man knows about what the local company is equipped to do and what it is not equipped to do, that is all he can testify to, and then it is for the Commission to determine what services are rendered the Ohio Bell Telephone Company is receiving.

Mr. Burr: To save time the question is withdrawn.

Q. State briefly, if you please, some of the services rendered by the General Staff of the American Company to the Traffic Department of the Ohio Bell Telephone Company which is in your charge?

A. Well, broadly speaking the Traffic Department of the Ohio Bell Company is divided into two branches, the engineering and the operating. The General Staff of the American Company, as I said before, furnishes a great deal of information that the engineering department—traffic engineering I have in mind—that the traffic engineering department of the Ohio Bell uses. The American Company has furnished us with complete information on the type of switchboard, local and toll, that is best adapted for varying conditions. It has also furnished us with the best practices for estimating the amount of equipment required for future periods and for providing the most economical layout of that equipment.

The American Company has also furnished us with practices which we use in connection with our toll line engineering. Those practices are what we consider about the [fol. 8584] best available, and we do all of our toll line engineering on the basis of the practices which have been furnished by the A. T. & T. Company in the form of general engineering circulars and traffic circulars.

Mr. Dotson: How does this differ from the practice of the independent companies?

The Witness: Well, I would say that the practices which the A. T. & T. Company have furnished to us are far su-

perior to the practices used by the independent companies that I have knowledge of. Of course, it is true that the independent companies have adopted a great many of the practices developed by the A. T. and T. Company. We are very glad to furnish those practices to our connecting companies.

Mr. Dotson: In what respect do you mean that it is far superior?

The Witness: I mean the methods which the A. T. & T. have furnished us make for better service.

Mr. Dotson: What are some of the methods you refer to?

The Witness: Well I have in mind operating practices. I have in mind engineering practices.

Mr. Dotson: In what respect have you in mind these certain things now?

The Witness: Well, as an example, when we took over the Ohio State Company, when the Ohio State Company was merged with the Ohio Bell Company——

Mr. Burr: The Ohio State Company being an independent [fol. 8585] company?

The Witness: Being an independent company up to that time we had occasion to review the methods which they used. We had occasion to review the results of the application of those methods, and we found that they had not resulted in the efficiency that would have been realized had methods which we had received from the A. T. & T. Company been used. I have in mind as a specific case the adjustment of the operating force in Cleveland. When we took over the Ohio State organization the operators were provided more or less on the opinion of the chief operator as to the number she required during various hours of the day. Our operating people made a survey of the number of employees on duty in the Cleveland offices.

Mr. Burr: Operators now, do you mean?

The Witness: Operators at various hours of the day, and found that the operators were not distributed in accordance with the requirements of the traffic, and I cannot quote the exact reduction that we made in the force, but it was material. I would say it was over 25 per cent.

Mr. Shuler: Don't you know as a matter of fact that the Ohio State phone service was more prompt in Cleveland than the Bell was?

The Witness: No, I don't know that.

Mr. Shuler: You don't know that?

The Witness: No.

Mr. Dotson: If it was more prompt, then you would regard the system you introduced as more efficient than the [fol. 8586] Ohio State?

The Witness: Well, as I say I don't know that it was more prompt. I doubt very much if it was, for the reason that they did not have enough operators on at certain hours of the day.

Mr. Dotson: Would you regard the judgment of the users of the phones on service as of any value at all as to efficiency of service?

The Witness: Why that depends upon how much the public wants to pay for prompt service.

Mr. Dotson: No, I mean what kind of service they regard as prompt.

The Witness: I feel this way—in fact I am quite sure that the people in Cleveland regard the service given by the Ohio Bell now and at the time we took over the Ohio State property as prompt service.

Mr. Dotson: The point I had in my question was that if the service of the Ohio State prior to merger or prior to the introduction of your method of handling the traffic was more prompt than after the introduction of your method, would you regard that as an improvement over the Ohio State method of providing service?

The Witness: I would say this, Mr. Dotson, assuming that the Ohio State was more prompt than ours, I do not think it could have been more prompt to the extent that any company would have been justified in carrying an operating force in excess of 25 per cent of the requirements to give the grade of service given by the Ohio Bell Com- [fol. 8587] pany at that time.

Mr. Dotson: How did your operating cost compare in total after you introduced your system as against the costs of the Ohio State system?

The Witness: Inasmuch as—this case I have in mind—inasmuch as we reduced the operating force 25 per cent, we naturally cut the operating costs proportionately.

Mr. Shuler: But as a matter of fact don't you know, Mr. Anthony, that the truth is that the per station cost of operating in Cleveland was less for the Ohio State than it was for the Ohio Bell?

The Witness: I do not know what the per station cost was in the Ohio State organization.

Mr. Burr: If your Honor please, with all due deference to the gentlemen on the other side and not intending to cut them off from any of their rights, we have borne with this species of guerilla cross examination for quite awhile now, and it seems to me that we will make time if the witness can be allowed to give his examination in chief in an orderly uninterrupted way, with the understanding that he will return or remain for any cross examination that the other gentleman may wish to have.

Mr. Shuler: My objection, if the Commission pleases, and the reason I have interposed my question, it is perfectly patent that the witness is trying to answer questions by Mr. Burr of which he has no knowledge, and that is the only purpose of interjecting at this particular time my [fol. 8588] questions. If the witness will testify to what he knows from observation or experience, I shall not interject any questions, but if the fitness is going to assume to answer questions of which he knows nothing, then I would like to have the record show the question which we interject to prove that the witness does not know.

Commissioner Poor: I have been wondering in my own mind what this record would look like if anybody would start in to read it, whether they could follow it very closely. The Commission has not felt like prescribing any rules or set of procedure in the matter. I have been waiting for some objection to come. We wanted you to have as much opportunity as you could to get something of the facts as you were going along, but on the objection of counsel for the company, we will have to proceed in an orderly manner and let the company put on its testimony, with opportunity for proper cross examination by one or all of you, and get through. Of course, counsel on the other side have a right to enter objections to any question or anything of that kind, but as far as the interjection of questions of cross examination at this time, if it is objectionable to the counsel for the company, the objection will be sustained.

Mr. Burr: My making the suggestion on that was prompted largely by my conversation with Mr. Shuler during the noon hour. I have rather felt we would have his moral support in raising the point at this time.

Mr. Dotson: Your Honor there is this side to this situa- [fol. 8589] tion that is quite serious to the interests that we men represent. We have an opportunity here by interjecting questions to cover a point that is fresh before all

of us, and I think it saves a great deal of time of the Commission and ourselves in bringing out and meeting properly and more effectively this testimony than any other way. All we are after is not a rigid cross examination regardless of investigation, but to get at the facts. For that reason we have taken liberties in an informal way to interject questions, as long as it is an investigation.

By Mr. Burr:

Q. Mr. Anthony, at the time of the late digression you had touched upon the matter of toll line engineering in response to a question in which you were asked to state briefly some of the services rendered by the General Staff of the American Company to the Traffic Department of the Ohio Bell Company. Will you please give the Commission some of the other services of that character?

A. The General Staff has also furnished information as to the best practices in connection with engineering training school equipment, that being equipment required to train our operators before they are placed at the commercial switchboard.

Mr. Dotson: Now, your Honor, let us have this understanding then in view of the course we are going to pursue. The witness has the responsibility here in the way of stating his knowledge it seems to me, and the witness probably should be advised on that. He says the company has furnished the best method for this, the best method for that. That is purely an opinion on his part. Maybe it is the best thing and maybe it is only better than the others know, [fol. 8590] and maybe it isn't any better than anybody else has, and it is giving a quality to this work that it properly does not possess, or may not possess. Maybe they have rendered service and maybe they have not. They have done certain things, but have they rendered any service of any value? That is the question for the Commission ultimately to determine, whether they have rendered any service of value? It is not for the witness to state whether it has been of any value, but to state what the service is, and then it is for the Commission to determine whether that was of any value which would justify a four and one-half per cent return of gross receipts. That is my analysis of it. I am admitting and conceding that the witness is proceeding in a way that he believes absolutely honest and

fair, but the Commission can see and we can all see that that is an improper way of stating it, and the witness, I think, ought to be advised as to making statements along that line, that that is not for the witness to say.

Mr. Burr: Let it be understood that wherever the witness has used the term "best" or some other superlative characterizing the services rendered, he is stating that merely upon his own judgment, and that the same thing will apply if he inadvertently or purposely uses the word "best" or any similar adjective in his subsequent answers.

Mr. Dotson: And that language is not to be regarded by the Commission as having any bearing at all on the quality [fol. 8591] or character of the work.

Mr. Burr: Except in so far as it reflects the judgment of the witness.

Commissioner Poor: Of course, he has qualified here as an expert traffic engineer and he may give certain opinions in regard to that, and the Commission may give that opinion what weight it sees fit.

Mr. Hagelbarger: It occurs to me if the witness is such an adept on deciding which is the best of these plans, the Ohio Bell needed very little assistance from the A. T. & T. Company, because if he knew, then he did not need to be told by the A. T. & T. Company about which was the best plan as to how to do these things.

The Witness: The General Staff has also furnished information and detailed practices regarding the estimating of ultimate building requirements. They have also furnished information regarding economical layouts of initial and ultimate buildings. We have also received from the American Company circulars covering the engineering of private branch exchange equipment. The practices which have been furnished are based upon the development of those boards which was also made by the A. T. & T. Company. We are also using in Ohio local and toll service observing boards, which were developed by the American Company, and the American Company has furnished us with detailed plans regarding the engineering of those boards. The American Company has also furnished us with information and detailed practices regarding the engineering of equipment in addition to switchboard equip- [fol. 8592] ment that is necessary in performing the functions of the Traffic Department, such as chief operators'

desks, information desks, multiple marking desks and other miscellaneous equipment.

In connection with the engineering of the equipment referred to above, it is necessary, of course, to have considerable data as regards past performance available to project our requirements into the future.

The American Company has developed methods which the Ohio Bell Company uses in connection with the taking of peg counts for various classes of local and toll calls, and for the summarization of those peg counts, so that they may be conveniently used by the Traffic engineers and also by the operating people in connection with projecting force requirements into the future.

The American Company has also furnished us with detailed information in connection with preparing traffic estimates for exchange fundamental plans, which are usually made for a period of 15 to 20 years in the future; also for toll fundamental plans, which are as a rule made for a 15 or 20 year period.

I think in your question, Mr. Burr, you asked me to confine myself to engineering practices.

Q. Oh no, I want the operating practices, local and toll?

A. The operating department is divided into two units, local and toll. The American Company has furnished information to both of those departments. Some of the information furnished was methods to improve the efficiency of local operating room management, which takes into con- [fol. 8593] sideration improvement in service and reduction in operating costs, local operating practices and instructions, which include practices as regards the handling of all types of local and toll calls. The American Company has also gotten out circulars that include detailed operating instructions, which are in such shape that we can place them in effect with practically no labor on our part.

The American Company has also furnished very valuable information as regards the adjustment of our operating forces, methods to improve switchboard loads, the training of operators and supervisors, the taking of local and toll service observations.

All of the items mentioned above and which are only part of the services furnished by the American Company, have to do with both local and toll service. I might cite a case that is special to toll operating. The American Company

during the past year and a half has organized classes for training associate company men in toll operating. In fact, after a man has completed that course, he is a toll specialist, and of a great deal more value to the company and to the public than before he had such training. These classes are held in various cities throughout the country. We have had two in Cleveland. The course lasts, I think, six weeks, and each day a different pole specialist from the American Company's office in New York visits this class and instructs the class in the items of toll operating that this man is particularly proficient in.

Q. Have you received all of the traffic circulars issued [fol. 8594] by the American Company so far as you know?

A. Yes, so far as I know we have received every traffic circular issued by the American Company.

Q. In the testimony of Mr. Archibald Allen recently given in this case there appear a few typical circulars issued by the General Staff, namely, general engineering circular 1,200, traffic circulars Numbers 117, 166, 174, 175, 176, 177, 178, and 200. Have you received those circulars?

A. Yes sir, we have received copies of all those circulars.

Q. In what way does the general engineering circular Number 1200 help you to solve the traffic engineering problems of the Ohio Bell Telephone Company?

A. General engineering circular Number 1200 is very valuable to the traffic engineers of the Ohio Bell Company, for the reason that it covers in detail practically all of the practices necessary in connection with the engineering of local and toll switchboard equipment, including the proper type of equipment to provide and the method of estimating future requirements. I might say that I think practically every man in my organization has a copy of this circular on his desk all the time. It is used every day by practically every man.

Q. Explain briefly the value to the Ohio Bell Telephone Company of traffic circular No. 117 issued by the American Company?

A. Traffic circular 117 covers the methods of estimating future requirements of operators for the purpose of training. It also covers the method of projecting the traffic into the future, so that the operator requirements can be determined, and it provides a means of adjusting the operat- [fol. 8595] ing force to the traffic during each half hour of

the day, so that there — always enough operators for the traffic and yet not an excessive number.

Q. Do you know of any of the circulars issued by the General Staff to your department which are not of material value to your company in engineering and operating its plant.

Mr. Dotson: I object.

(Question read.)

Commissioner Poor: Do you object to the word "material" in there?

Mr. Dotson: Well, that is the principal one.

Commissioner Poor: Elim-ate the word "material" and he may answer the question.

(Question read as amended.)

Mr. Dotson: I still object.

Commissioner Poor: Objection overruled.

Mr. Dotson: Note an exception.

The Witness: No, sir.

Q. Do you know of any of the circulars which are not or have not been used by your company?

A. No, sir.

Q. Have you available at this time any typical traffic circulars in addition to those submitted by Mr. Allen?

A. Yes, sir.

Q. And by traffic circulars I mean circulars received from the American Company?

A. Yes, sir, I have traffic circular No. 133, which was issued by the American Company and is entitled "Notes on local training department equipment and arrangement of building space."

[fol. 8596] Mr. Burr: It may be marked for identification Anthony Exhibit No. 1, and it is offered in evidence.

And thereupon the circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Anthony Exhibit No. 1, and made a part hereof.

Q. It consists of approximately 50 pages, and I will ask you whether or not you and your company have had any occasion to use this circular No. 133?

A. Yes, we have used this circular in connection with the engineering of the training schools that we have in our various local exchanges. This circular covers the complete layout of an operators' training school, including practice switchboards at which our students are trained before being placed at the commercial switchboard. It covers a calling desk for the use of instructors in originating the calls, practice calls; it covers what we call a multiple practice board, which is used in giving the students training in making connections to subscribers' multiple. It covers equipments for the students to listen in on experienced operators, demonstration equipment for use in the classrooms, and then covers suggestions as to the desirable layout of the training school floor safe, including classrooms and practice rooms and so forth.

Q. Without undertaking to go through all of the circulars [fol. 8597] mentioned by Mr. Allen or all of those that your company has received from the American Company, I am going to ask you whether you have with you any more circulars, and by that I mean traffic circulars furnished your company by the American Company, and being in addition to those referred to in Mr. Allen's testimony.

A. Yes, sir, in addition to those furnished by Mr. Allen and the one I have just placed in evidence, I have one more.

Mr. Burr: That will be sufficient. We do not want to encumber the record too much.

Q. What is the one that you are now referring to?

A. Traffic circular No. 140, which covers central office instruction.

Mr. Burr: It may be marked Anthony Exhibit No. 2, and is offered in evidence.

And thereupon the circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Anthony Exhibit No. 2, and made a part hereof.

Q. Briefly what subjects does it cover?

A. This circular covers methods of ascertaining the proficiency of operators after they are placed at the commercial switchboard, and makes reference to equipment used in that connection and which is covered in another circular.

[fol. 8598] The point of this circular is this, that while we give our operators a very thorough training in our school, before being placed at the commercial switchboard, we feel that we go a little further than that and give some of the operators a little more training after they have had some experience at the commercial switchboard, and this bulletin provides a means of finding out which operators require that instruction, and also the method of taking up with the individual operators the points on which we have found them to be deficient.

Q. What proportion do the circulars covered by your evidence and those by Mr. Allen constitute of the entire number of circulars furnished by the American Company to your company, if you know?

A. I would say less than five per cent. Mr. Allen put in eight, and I have just put in two. That is ten. And we have received from the A. T. & T. Company over 200 traffic circulars that have been furnished, and then a great many circular letters to which numbers have not been assigned.

Q. In addition to furnishing the Ohio Bell with information regarding the engineering and operating developments as covered in the traffic circulars which we have been discussing, does the General Staff assist the Traffic Department of the Ohio Bell Telephone Company in solving specific traffic problems?

A. Yes, sir. We quite frequently call upon the engineers of the General Staff to assist us in solving some of our specific problems, for the reason that they may have under way developments that will be of value in the work that we have in mind; also they keep us in close touch with the [fol. 8599] developments in other associated companies and their experience in the work those companies have done or are doing is of value to us in connection with our specific problem.

Q. Do representatives of the General Staff come to Ohio to consult with and assist you in your work for the Ohio Bell Company?

Mr. Dotson: I object. I do not think that that is the question. I will object to that.

The Witness: Yes, sir.

Mr. Dotson: Have they come here?

Mr. Burr: Have they come within the past three years?

The Witness: Yes, sir, very many of them. I have in mind a case this week where Mr. S. H. Brown, who is special problems engineer of the A. T. & T. Company, and Mr. Baker, his assistant, were in Cleveland at our request to assist us in connection with a fundamental plan we are making of our toll plant. They arrived Monday morning and I left Monday evening. I don't know whether they are still in Cleveland or not. But they were to stay until our people had gotten as much information as they needed on that particular point.

Last week Mr. James, Mr. Darrow and Mr. Rappleye, of the American Company, came to Cleveland at my request to discuss with us and assist us in the engineering of a toll tandem board which we have planned for Cleveland, and which we probably will provide at other points in Ohio later on. Mr. Rappleye stayed during the entire week and worked with one of my men on the details of the project we have in mind.

Early this month Mr. Morgareth, of the General Staff [fol. 8600] came to Ohio at our request to assist us in the taking of machine switching service observations, which is a more or less new development. The American Company just a few years ago developed service observing equipment for following a call through an automatic exchange and getting detail information as to the progress of that call, which gives us a picture of the grade of service we are rendering in our automatic office. Mr. Mogareth visited several points in Ohio where we have this equipment and helped train our service observers, and also assisted in the training of a supervisor in my office who will have charge of the technique of that particular work. Mr. Morgareth spent two weeks with us and is coming out again next month at our request.

Early this month Mr. La Chance of the General Staff visited me in connection with some problems we have on the training equipment required in connection with our Youngstown merger. He also visited some of our operating people and made, I think, two trips to Youngstown and actually assisted in the training of the special force, operating force, we will require after we go to full mechanical operation at Youngstown.

Q. Do you remember how long he was here on that?

A. Not exactly. He spent three days with me on one trip

and two on another. I did not go to Youngstown with him and I don't know how long he was in Youngstown on either trip, Mr. Burr.

Mr. Van Hagen visited us in February of this year in connection with our cutover plans at Youngstown. Mr. Van Hagen is the American Company specialist on traffic ma- [fol. 8601] chine switching cutovers, that is, on the traffic end of machine switching cutovers.

Q. What do you mean by cutover?

A. I mean where you are changing your operation from manual to automatic, that requires a great many considerations. A great many new problems arise, and we have not had very much experience in this territory with that sort of thing. Mr. Van Hagen has traveled from coast to coast for the, oh, I think, five years on that particular work and is a specialist in it. Mr. Van Hagen also visited us last fall, spent some years at Youngstown in connection with the same matter, and we have asked him to come out again in April. In December of last year, Mr. Wotring visited me in Cleveland at my request in connection with a short haul toll problem we have in Cleveland. He spent several days with me. He assisted us in solving that particular problem.

In November, 1923, Mr. Raynor, of the General Staff, visited me in connection with certain A, B toll problems we have throughout the state.

In September, 1923, Mr. Darrow of the American Company visited me at my request to assist us in solving some A, B and two number toll problems we have at Youngstown, Cleveland, Akron, Dayton, Canton and several other places.

I have given those cases that I remember of personally, where I personally requested men to come out, and I could cite other cases further back. Of course, we have our operating department, and we have in Cleveland the general supervisor of toll traffic, the general supervisor of local [fol. 8602] traffic, and in our various division headquarters we have our division traffic superintendents. Each one of these men holds conferences about as often as I do with men of the Staff, but I will not try to detail any of those cases.

Q. Have you in mind a few cases where the Ohio Bell Company's engineers have visited the American Company's General Staff in New York in connection with specific problems of the Ohio Bell Company?

A. We do not visit New York as often as the Staff people visit us. They are always glad to come out here and to save us the expense. It also makes it possible for us to get more of our people in on conferences if they come out into our territory. But I have in mind a case last spring where Mr. Blackburn, who is a member of our organization, visited New York and conferred with several men in regard to equipment problems we had at Youngstown and Massillon and Canton and Columbus and other points.

Last July I also visited New York and conferred with several staff men in connection with our unification plans at Columbus, our unification plans at Youngstown, our A, B toll station, and also discussed with me methods of making comparative cost studies on several problems we had under way at the time.

I also visited New York in January of this year in connection with our short haul toll problems at various points and in connection with the Columbus merger.

There are a great many other cases where our people have visited New York, but they have come out here oftener [fol. 8603] than we go down there.

Q. Do you also request assistance from the General Staff by means of correspondence and by telephone where the cases require quicker action?

A. Yes, where a case requires information very quickly we call the Staff men on the telephone. I have in mind a case last fall where I called Mr. Wotring in connection with our Cleveland A, B toll situation.

Q. Whom did you call?

A. Mr. Wotring.

Q. Of the General Staff?

A. Yes, sir, that is W-o-t-ring. I also talked to Mr. Stimsom recently over long distance in connection with handling the coin box service on a machine switching basis. It was something we wanted a quick answer on and he had had experience along that line at other places.

Q. Who is he?

A. Mr. Stimsom is assistant to the local engineer of the General Staff of the American Company. We have any number of conversations, telephone conversations with them. I don't recall any others offhand.

Q. Have you any information regarding the savings made by the Ohio Bell Telephone due to improved engi-

neering and operating methods developed by the General Staff of the American Company and furnished and made available to the Ohio Bell Telephone Company.

Mr. Dotson: Let's have that question.
Mr. Shuler: When?
Mr. Dotson: Yes or no.
The Witness: Yes, I have—
Mr. Dotson: Hold on, that answers the question.

Q. Will you please give the Commission the benefit of [fol. 8604] a few of those savings?

A. Well, I have evaluated a few cases where the Ohio Bell Company has made savings by adopting the practices recommended by the General Staff of the American Company.

Q. Will you give the examples, limiting your answers to the savings for the year, 1923?

A. The first case I have in mind is the adoption of what we call the single ticket toll operating method. That method was developed by the American Company. Prior to the development of the single ticket toll operating method, two tickets were made on each long distance call, one by the toll operator at the originating point and another ticket by the operator at the terminating point. The operator at the terminating point recorded the details of the call placed by the subscriber, that is, the recording operator did that. The call was passed to the line operator at the originating point, and when she reached the distant office, she passed to the inward operator at that office—rather she passed to what we call the ticket operator at that office the details of the call. The distant operator then dealt with the called subscriber, and when she had him at his telephone she reported to the operator at the outward office.

The American Company developed a method which eliminated the writing of the ticket at the distant office, and that method is known as the single ticket toll operating method. With the single ticket method the outward operator deals direct with the called subscriber. The only function performed by the operator at the distant end on those calls [fol. 8605] handled by the single ticket method is to ring the called subscriber.

For the year 1923 the Ohio Bell Company made a saving

of $570,200.00, due to the introduction of the single ticket toll operating method.

Mr. Shuler: May I ask for a statement from him on that point?

Mr. Burr: I am just going to ask him, how was the saving of that amount accomplished?

The Witness: The single ticket method reduced the operating labor by 39 per cent, and, of course, a corresponding reduction in switchboard charged. The single ticket method gave us a reduction of ten per cent, a little better than ten per cent in the way of toll circuit time. The annual savings for the year 1923 for those three items make up this $570,200.00.

Mr. Shuler: Is that for the Ohio Bell toll lines now, Mr. Anthony?

The Witness: Yes, that does not include the traffic handled at any connecting company offices. That is Ohio Bell only.

Mr. Shuler: Will you show me in the two reports of the company for 1922 and 1923 that saving?

The Witness: No, I did not mean to infer that this method is placed in effect on January 1st, 1923. It is——

Mr. Shuler: All right, when was it?

The Witness: It has been put in gradually for the last [fol. 8606] several years. I would say that this method was probably introduced something over seven or eight years ago. I don't know the exact date.

Mr. Shuler: I thought this was done in 1923.

Mr. Burr: No, this was the saving for 1923.

Mr. Shuler: Thank you. That is all I asked him for. He said he couldn't do it because it was for a period of over seven years. Can you give me the statements of your company for the years 1922 and 1923 which shows this saving made in the year 1923?

Mr. Burr: No, Mr. Shuler, you have not got the point at all. It is not a savings over 1922, but it is savings in the year 1923 from that particular method which was used. Now, there was a saving by the application of the same method in the year 1922 and there was one in 1921 and 1920 and so on back to the time when it was first inaugurated, and the witness says that saving has been increased as time has gone on.

Mr. Shuler: All right, if the questions are asked so that I can understand them, that is one thing. But I thought your question was to give the inference that in 1923 due to this thing, that saving was accomplished in 1923.

Mr. Burr: Oh no, I asked him the question I did, that is, asked the question as I did as to 1923, out of deference of what I thought would be the wishes of you gentlemen on the other side, namely, that you would like to have latter day savings rather than more remote ones first.

[fol. 8607] Mr. Shuler: If they were using in 1923 the method used in 1906 they would have saved this $570,000.00.

The Witness: I did not say 1906.

(Previous statement of witness and counsel read.)

Mr. Shuler: As I understood you, you are trying to say that your operating expenses would have been that much more had this single ticket method not been in effect?

The Witness: That is right.

Mr. Burr: I don't think Mr. Shuler's statement is right. It is just the opposite.

Mr. Shuler: They adopted a new method some years ago, some six or seven years ago, Mr. Anthony?

The Witness: Yes, I recall the method being in use to some extent. Let us go back a time when you were using the other——

Mr. Shuler: I don't care when it was. Let's put it 1914. If you were using last year the method you used in 1914 it would have cost you $523,000.00 more to operate——

Mr. McConnaughey: $570,000.00.

The Witness: $570,200.00; that is, if we had been using in 1923 the method we used before the American Company developed this single ticket method the operating expense for the Ohio Bell Company would have been $570,200.00 more than it was actually during the year 1923.

Mr. Shuler: Pardon me this question.

Mr. Burr: We are getting into the bush whacking state again.

Mr. Shuler: No, there is only one on our side you know.

[fol. 8608] Mr. Burr: There are more in evidence.

Q. What will you say as to the saving, if any, due to the introduction of overlap ringing and what is overlap ringing, and how did it come to be adopted by your company?

Mr. Shuler: And when, and then I will not be confused in the answer?

A. The overlap ringing toll method was developed by the American Company in 1922 and adopted by the Ohio Bell Company during the same year. Prior to the introduction of the socalled overlap ringing method the practice was for the operator, toll operator, at the originating point to select the line of the calling subscriber and hold it without ringing. The outward toll operator then rang the distant office and gave the operator at that office the number of the called station. The distant operator rang the called subscriber, and when he answered his telephone and reported that he was ready to talk, the toll operator at the originating end then rang the calling subscriber. The introduction of the overlap ringing method brought about a change whereby both the calling and called subscribers were brought to their telephones, were rung and brought to their telephones at approximately the same time. With this new practice, when the inward operator at the distant point starts to ring, she so advises the outward operator by the phrase, "Ringing". At the same moment the outward operator rings the calling subscriber. Therefore, both subscribers are brought to their telephones at approximately the same time. That saves considerable [fol. 8609] operating in that with the new method the outward operator does not have to wait during the time both subscribers are being brought to the telephone; that is, in the original method she waited first for the called subscriber to report this telephone, and then for the calling subscriber to be brought to his telephone. Now, they are both brought at approximately the same time, making a material saving in operating and circuit usage time. This method reduces the operating expense about ten per cent, a little over ten per cent, and makes a corresponding reduction in switchboard charges and reduces the waste circuit time by something over five per cent. If the Ohio Bell Company had used during 1923 the old method as against the new method developed by the American Company, its operating cost would have been $76,318.00 more than it actually was.

Q. Do you know of any company which had evolved and inaugurated the overlap ringing which you have described prior to the time of its adoption by the Bell System?

Mr. Dotson: I object on the ground that that does not prove anything. A number of others might have had it and he would not know it.

Mr. Burr: He has a right to say whether he knows it or not.

Mr. Dotson: But it doesn't prove anything.

Mr. Burr: It proves whether he knows it.

Mr. Dotson: But nothing as to the issue.

Mr. Burr: Withdraw the question.

Q. Do you know whether or not the Bell System was the [fol. 8610] first to inaugurate and adopt the overlap ringing system which you have described.

Mr. Dotson: I object.

Commissioner Poor: Objection overruled.

Mr. Dotson: Note an exception.

The Witness: So far as I know, and we keep in pretty close touch with the developments made——

Mr. Shuler: Why doesn't he answer the question?

Mr. Gentsch: He can answer that yes or no.

(Question read.)

A. So far as I know the American Company was the first to adopt the method I have just described.

Q. What have you to say as to the single ticket toll method described in one of your previous answers?

A. To the best of my knowledge and belief that method was also first introduced by the American Company.

Q. You are referring to the particular method which you have described in your previous answer?

A. Yes, sir.

Q. What have you to say as to the savings due to machine ringing B boards developed by the American Company through its General Staff and adopted by your company?

A. During the year 1923 the Ohio Bell Company saved $267,300.00, due to operating with machine ringing trunk circuits which were developed by the General Staff of the American Company. I might state that prior to the development of machine ringing trunk circuits, the ringing current was on a key associated with the trunk cord at the trunk position. After making connection to the subscriber's line, it was necessary for the B operator or trunk switch- [fol. 8611] board operator, to press the key and hold it for the length of time which she had to send ringing induction,

over the line. It was necessary for her to press that key each time she had to send ringing induction over the line. With the machine ringing trunk circuit developed by the American Company, the ringing current is on the trunk cord and plugging the plug—this cord into the multiple jack automatically starts ringing and it rings intermittently until the called subscriber answers or until the operator takes down the connection if the call is not completed. The introduction of that method gives us a 25 per cent reduction in B operating labor, and a corresponding reduction in switchboard position requirements.

Q. What do you mean by switchboard position requirements?

A. I have in mind that if a method saves operators it also saves investment in equipment, as you require fewer positions; you cut your equipment in about the same ratio as your operators.

Q. Have you evaluated that savings in equipment in arriving at the $267,300.00?

A. Yes, sir, I have this figure of $267,300.00, which includes the operating saving and includes the savings in charges on switchboard positions but makes allowance for the additional cost of the machine switching cord circuits. They are more expensive than the manual, and the excess annual charges on that additional investment has been deducted from the savings. So this figure I have is net savings.

Q. When you said machine switching cords, you meant [fol. 8612] machine ringing cords?

A. Machine ringing cords, yes, that is right.

Q. What have you to say as to the savings due to the introduction of prepay coin boxes?

A. The introduction of——

Mr. Shuler: May I have an explanation of that, please, this prepay coin box? You mean in public places, Mr. Burr?

Mr. Burr: Yes.

The Witness: Yes, sir.

Mr. Burr: The witness will explain.

The Witness: Prior to the development of the prepay box equipment by the General Staff of the American Company, we had in service what was known as post pay coin boxes. With the post pay method, it was necessary for the operator

to first get the called subscriber to his telephone before the coin was deposited by the calling subscriber. The development of the prepay coin box provided a means for holding in what might be called a neutral zone the coin. The calling subscriber deposits his coin before he gets the operator—depositing the coin brings in a signal at the switchboard. The operator then rings the called subscriber, and if the call is completed, she operates a key associated with the cord which she has used in answering the call, and that deposits the coin in the box. If the call is not completed she operates what we call a return key and that returns the coin to the calling subscriber.

Q. How does the savings result in such case?

A. We reduce our operating labor approximately 50 per cent with the prepay coin box operation, over the old post pay operation.

[fol. 8613] Q. And what does that amount to in dollars saved for the year 1923?

A. I have evaluated the savings for the city of Cleveland only, as I did not have time to get the records for the other points where we have prepay service. The saving during the year 1923 in Cleveland alone was $139,031.00.

Q. What does that make the total savings from those items which you have enumerated?

A. The total savings for the year 1923 for the four items that I have covered was $1,052,932.00. I might say there that in reading my previous figures I rounded off the last two digits, and my total here is based upon carrying the dollars right out. I could just take care of that by putting in the record here the exact figures for each of these items.

Q. Yes.

A. The single ticket method $570,206; machine ringing trunk circuit, $267,377, prepay coin box service $139,031.00; overlap ringing toll operating method $76,318.00, making a grand total for the four items of $1,052,932.00.

Q. Those savings were all for the year 1923?

A. Yes, just for the one year.

Q. Have you evaluated any other savings resulting from the adoption of developments brought about by the General Staff of the American Company?

A. No, sir. I have evaluated only these four. They are typical. We have others—other cases where other develop-

ments have resulted in savings to the Ohio Bell Company, but I have not attempted to evaluate any others.

Q. Can you name two or three of them?

A. The American Company developed what we know as the Number 1-C subscribers' switchboard. That switch- [fol. 8614] board is arranged for automatic listening, automatic ringing, audible ringing signal. We are using that switchboard in several of our exchanges in Ohio, and the use of that equipment has resulted in a reduction in our expenses. The American Company also developed what we know as the A, B toll operating method. That is a method where, instead of connecting a subscriber with a long distance operator, the A operator, the subscriber's own operator, handles his call to certain nearby points. We are using that method in Ohio and that has resulted in savings to the company.

The American Company also developed what is known as the two number toll operating methods. By that method the A operator, instead of connecting the calling subscriber with the long distance recording operator, passes the number to a two number toll operator. The subscriber remains at his telephone. He does not hang up until the two number toll operator has completed the connection. That reduces operating labor and, of course, means a reduction in expenses to the company.

The American Company have developed many other practices that have resulted in savings to the Ohio Bell Company, such as improved local central office management, improved toll central office management. This bulletin I mentioned on force adjustment, I think if we could evaluate that particular bulletin, we would get a tremendous saving. I can enumerate any number of cases. I do not know how far you want [fol. 8615] me to go with that, Mr. Burr.

Q. Well, enumerate one or two more.

A. The American Company has developed practices for the engineering of local and toll central office equipment and toll line engineering, which we are using, and which have resulted in economical additions to the plant, thereby reducing the annual charges on our investment. The American Company has also developed a great many methods or practices used in local and toll operating in addition to those I have evaluated that have actually reduced the operating labor, thereby reducing expenses.

Q. We won't take up any more time with those. Let me ask you, however, whether you or your company in so far as you know have ever requested assistance of the American Company's General Staff and the assistance has been refused?

A. To my knowledge no member of the Ohio Bell Telephone Company has ever been refused assistance. I know that I never have been. In fact the engineers of the American Company are glad to assist us at all times.

Mr. Dotson: May I ask one question?

Mr. Burr: Yes.

Mr. Dotson: I just want to ask the witness if the valuation which he places upon the services mentioned as rendered by the General Staff of the A. T. & T. Company is based entirely upon saving the cost of operation and of capital investment only?

The Witness: I just don't get your question, Mr. Dotson.

[fol. 8616] Mr. Dotson: Just read it.

(Question read.)

The Witness: Yes, I have not included any other savings in those figures.

Mr. Dotson: Then you do not take into consideration the element or factor relating to the question of improved service or more efficient service to the subscriber?

The Witness: Oh, I might say that each one of these items that I have referred to, in addition to reducing the operating expenses there has been a material improvement in service. For instance, with the single ticket method we speed up our service. We eliminate that work at the distant office, have only one operator dealing with the called subscriber and get a call through faster. I might have included something in addition to what I did because undoubtedly—in fact I know that that method has increased our revenue, that is to say, fast service decreases your lost calls, thereby increasing your revenue.

On the machine ringing trunks, that, of course, is at least as good service. I don't know that you would say that was particularly an improvement in service. It is as good as manual ringing. On the overlap ringing method, that, too, speeds up the service. We get our subscribers actually talking at a shorter interval than the old method, and the prepay

coin box service is certainly as satisfactory to the subscriber as the other.

Mr. Shuler: I lose too many nickels by it.

[fol. 8617] Q. With reference to the traffic engineering practices referred to in one of your previous answers, and particularly your reference to local switchboards and toll switchboards, give the Commission some idea, if you please, of the switchboard operation which is covered by those practices. I know that this Commission is fairly familiar with the operation of a switchboard, but for the benefit of the record will you show how these practices which you speak of apply to the switchboard operation?

A. Well, they start out with. "We want a new exchange at some point in Ohio." The first thing to determine is, of course, what sort of a city that is going to be twenty years from now, in order to determine the type of switchboard to provide, that is, so that we can provide the switchboard initially that will take care of our requirements for a number of years without replacement.

The American Company have provided us with methods of determining our requirements for 15 and 20 years hence. I think I referred to that in the exchange fundamental plan item.

Knowing the size of the exchange, we are then in a position to select the type of switchboard. Now, the American Company have covered in general engineering circular No. 1,200 all types of manual switchboards. I might say that in addition to 1,200, they have issued circulars covering all types of machine switching equipment. 1200 covers all types of manual switchboards, together with indications as to where, under what conditions, they can be justified. That is based upon a number of years' experience on the part of the Amer-[fol. 8618] ican Company in their dealings with associated companies.

Having decided the type of switchboard, we then have quite a problem to lay that equipment out economically. I have in mind what we call the face equipment, that is, subscribers' answering jacks, out trunk multiple, subscribers' multiple and other equipment of that character. There is always the question of whether we should, especially in multi-office cities, put subscribers' multiple in the A switchboard or whether we should limit the subscribers' multiple to the trunk switchboard having the A operator trunk all

calls. There are cases where it is not economical to run the subscribers' lines through the entire A board, especially in a large multi-office city where the A operator completes a relatively small percentage of the originating calls in her own office. She might trunk 80 per cent of them to other offices and the multiple which we install in the 8 switchboards and which, of course, cost money would be used for only 20 per cent of the traffic.

Q. Isn't it true that the use of that method depends in every case upon whether or not it will prove in in that particular exchange?

A. Oh yes. It is all a question of the conditions surrounding the particular exchange which you have in mind. The American Company have provided methods of determining the economy of that particular thing under varying conditions. There is always the question of whether we should have more than one appearance of our answering jacks, what is known as multiple answering jacks. That is a question of cost. In some cases we can justify one thing and in some [fol. 8619] cases the conditions demand another.

The American Company have, through their time studies the various intervals required in completing calls and in connection with team work and so forth, determined under what conditions multiple answering jacks will prove in. That information is also covered in general engineering circular No. 1200.

Then there is the question of how much subscribers' multiple shall be installed in the switchboard ultimately and initially. We might find, for instance, that initially we would have enough space in our switchboard for say 9,600 subscribers' multiple and have all of the out trunks we needed. By out trunks I have in mind trunks to other central offices. However, looking forward a number of years, our trunking might be increased to a point where we would have to remove part of the 9,600 and go to the expense of raising the subscribers' multiple sufficiently high in the Board to get in enough jacks for the trunking experience for that future period.

Q. What do you mean by multiple? What is it briefly?

A. By subscribers' multiple I mean the jacks in the switchboard to which the subscribers' lines are connected and in which the A operator answers the calling cord of her cord pair to complete the connection.

Q. Those jacks are arranged in panels, are they not?

A. Yes, sir.

Q. Those panels are in front of the operator?

A. Yes, sir.

[fol. 8620] Q. When you repeat in a second panel the same numbers as are contained in the first panel, that constitutes a multiple, does it not?

A. That is right.

Q. And you multiple that accordingly as it is economical or not to do so?

A. Yes, sir. The American Company have provided us with information which gives us a basis for determining what space should be allowed in our switchboard for our ultimate requirements so as to avoid false work in later years. Now, our toll switchboard engineering, we have several types of toll switchboards. We have several different toll operating methods, all of which require their own type of switchboard. First, we have what is known as the recording board, that is, the board to which the subscriber is connected when he calls for long distance. That board is arranged with what are known as recording answering jacks, which are the termination of jacks located in the A operator's switchboard, and to which she connects her calling cord to connect the subscriber.

Q. What is training school equipment?

A. Training school equipment is equipment particularly designed for the purpose of training students to become operators.

Q. Why is it necessary to make any study of the kind of equipment to use in the training school?

A. It is necessary to make a pretty thorough study of the equipment required in a training school, as the conditions for various exchanges are different. For instance, in Cleveland, we have classes of service that we do not have in some of our other cities, and we put in special equipment for that purpose.

[fol. 8621] Q. Who evolves that special equipment?

A. The A. T. & T. Company have developed equipment for all classes of training.

Q. When you speak of equipment you mean a switchboard, that is, a dummy switchboard?

A. I mean several types of equipment. We have what we call a practice switchboard. It is not desirable to take

a student and put her right at the commercial switchboard, in other words, inflict her upon the public. So that we install what we call a practice switchboard, and except that it is much cheaper than the commercial equipment, it looks just like it. Our instructions originate what might be called fake calls. The operator handles them, as she has been instructed prior to being placed at this practice board. By several hours of actual practice each day the student becomes quite proficient, and when she is placed at the commercial board she is able to handle a certain amount of traffic accurately. Of course, she requires special training over the next several months.

Q. What I had more special reference to was the respects in which the services of the General Staff of the American Company are valuable to you in the matter of engineering your training school equipment?

A. Well, I might state a specific case. About two years ago it was necessary for us to relocate our Cleveland training department. We have a very large training department in Cleveland. It was located in the old Arcade, and we wanted to move it to the Electric Building. Now, the A. T. & T. Company during the last several years have made some very valuable improvements in local training [fol. 8622] school equipment, and we wanted to take advantage of those when we reinstalled this Cleveland Board. So instead of one of our engineers traveling all over the country to find out what other companies were doing in connection with training school equipment, and probably having our equipment engineers spend several months to determine——

Mr. Shuler: What did he do?

The Witness: He took this circular which I have exhibited today and found all of the information that was necessary to engineer this Cleveland training school equipment. It saved our company a lot of money.

Q. How do the services of the General Staff assist you in the matter of operating practices as applied to traffic management and force adjustment and matters of that kind?

A. The handling of telephone traffic, of course, is very complicated and it — necessary that we have definite and uniform instructions for all of our operators. With

anything as technical as local and toll traffic, it, of course, is necessary to eliminate the judgment factor on the part of our operators to a very large extent. Now, the American Company have developed detailed operating practices and instructions by which our chief operators, our supervisors and our operators are trained. If that information were not available it would be necessary for the Ohio Bell Company to maintain a large organization, a large staff organization, on methods work, and probably get around to the various companies and find out what they were doing, so that we could always have the advantage of the thinking powers of the entire telephone system. Instead [fol. 8623] of that, our operating people take the operating practices and instructions developed and issued by the A. T. & T. Company and place them in effect in Ohio.

Q. To what extent has the American Company been of assistance to you and your company in the matter of recording results of operation? You spoke of peg counts a moment ago. What is a peg count?

A. The olden peg count term comes from the practice in the olden days where a peg was moved from hole to hole as operators completed calls. Now, of course, we have more up-to-date methods of counting our calls. We count our calls by means of electrically operated registers. But what a peg count means to us is a record of the telephone traffic in terms of calls that are handled by our operating forces.

Q. To what extent has the American Company been of benefit to you in handling the matter?

A. The American Company has developed the peg count practices which we are using in Ohio.

Q. Briefly, how is the American Company of any service to you and your company in the matter of information desks, chief operators' desks and multiple marking desks? You referred to those in your earlier testimony.

Mr. Dotson: I want to object to that question. I should have objected to the previous one, on the same basis.

(Question read.)

Mr. Dotson: I object to the word "service".

Mr. Burr: Take the question out.

Q. To what extent, if any, has the American Company

[fol. 8624] made any suggestions to your company, and which you have adopted, with reference to information desks, multiple marking desks and chief operators' desks?

A. The American Company has developed chief operators' desks, information desks, multiple marking desks and other types of desks and has furnished information regard- the design and operation of these desks to the Ohio Company.

Q. How do those desks differ from any ordinary desk?

A. Oh, those desks might be termed small switchboards. They have various kinds of jack equipment and cord equipment and key equipment necessary to handle the traffic that comes to them.

Q. Is the information desk the one which is occupied by the information operator?

A. Yes, sir.

Q. What is the multiple marking desk and what is its purpose?

A. The purpose of the multiple marking desk is to handle changed numbers. For instance, if a subscriber gives up his telephone service, his name continues in the directory until a new issue comes out and the public is calling for that number.

Q. What is the equipment on that desk or about it?

A. The equipment on that desk is a number of jacks and keys, with private trunks from all of our A positions and B positions to this desk. Those trunks terminate in either cords in plugs or in keys. We have different types. That provides a means for the multiple marking operator——

Q. What does the multiple marking operator do in brief?

A. The multiple marking operator upon answering a [fol. 8625] call gets the number of the called station and refers to the records, which we keep up to date, indicating the status of each line in the office, both working lines and lines that have been discontinued or the number changed or some other change in the status. She has a complete record of every multiple part in the office and by means of that record she advises the calling subscriber as to the status.

Q. Are all calls involving that sort of numbers switched to the multiple marking desk?

A. Practically all of them.

Q. Now, finally, what is a service observing board?

A. The service observing board is a switchboard where we observe the grade of service rendered our subscribers. We provide in that board equipment for connecting two scattered lines throughout the office and providing means for the observer to follow the program of each call, originating from a line under observation, getting detailed knowledge of the efficiency with which the call is handled.

Mr. Burr: That is all for Mr. Anthony at this time; unless the gentlemen on the other side would like to have him remain for cross-examination tomorrow, we would be glad to have him dismissed with the understanding that he will return at your call.

Mr. Shuler: I would like to have Mr. Anthony furnish me certain information. Now, I can tell him now or I will tell him tomorrow.

Mr. Burr: Ask for it now and then he can be released for the time being.

Mr. Shuler: Mr. Anthony you certainly made your esti- [fol. 8626] mates of saving from data?

The Witness: Yes, sir, from the records.

Mr. Shuler: I would like to have the data showing the savings on the overlap ringing, I mean supporting data. I want to see your figures, how you arrive at it. On the operating machine ringing trunk circuits, on the coin box matter and the single ticket system. Now, that is all. Then I would like to know when the overlap ringing was instituted.

The Witness: That was 1923.

Mr. Shuler: When the ringing trunk circuit was adopted when the coin box was adopted, and the single ticket system. He said these were adopted some time ago.

Mr. Dotson: I would like to have that same information, since you are getting it for him.

The Witness: All right.

Mr. McConnaughey: Make a copy of it for all of us.

Mr. Shuler: Then I would like to know the number of operators in the year 1922 working on the coin box matter and the number working in 1923.

The Witness: Just on that point, Mr. Shuler——

Mr. Shuler: There is the only place you can show me a saving. If you have a saving, you have less operators on the job or the same number handling more messages. I don't care in which way you hand it to me, whether in the

less operators handling the call or the same number of operators handling more calls.

The Witness: I was just going to suggest in this connection that we mix to a certain extent the classes of [fol. 8627] service, that is, we have fractions of operators on one of those classes or the other. But I can give you supporting data on all of those.

Mr. Dotson: I want to state with reference to Mr. Schneider's testimony, we expect to request tomorrow similar data from him. We are not prepared to make known yet our request, and I could not do it before he left the stand today.

And thereupon the further hearing of this matter was adjourned to ten o'clock, Thursday Morning, March 27th, 1924.

[fol. 8628] Thursday Morning

March 27, 1924.

And thereupon the further hearing of this matter was resumed pursuant to adjournment.

Present:

Same counsel as at the previous session.

And also BENJMIN T. MCBURNEY, called as a witness, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. Will you state your name and address?

A. Benjamin T. McBurney, 225 East Fourth Street, Cincinnati, Ohio.

Q. What is your business, Mr. McBurney?

A. Telephone business.

Q. With what company are you associated and in what capacity?

A. I am associated with the Cincinnati and Suburban Bell Telephone Company; my present position is vice president and assistant general manager.

Q. How long have you been connected with that company and in what capacities?

A. I have been connected with the Cincinnati Company since September, 1922, and I have been successively as-

sistant auditor, auditor, assistant general manager and [fol. 8629] am now vice president and assistant general manager and also a member of the Board of Directors.

Q. Where does that company operate?

A. It operates in Cincinnati and Norwood, Ohio, Covington and Newport, Kentucky, and approximately a radium of 50 miles of Cincinnati.

Q. Approximately how many stations has your company in service at this time?

A. I can give you that figure exactly. As of February 29th, 1924, 142,948.

Q. Does the American Telephone and Telegraph Company own a controlling interest in your company?

A. No, sir.

Q. Has it ever owned a controlling interest either directly or indirectly in your company?

A. No, sir.

Q. Is the American Telephone and Telegraph Company a stockholder in your company, and if so, what percentage of the total capital stock of the company does it own?

A. The American Company owns a minority interest, something under 30 per cent.

Q. Is the remainder of the stock in your company actually owned in good faith by persons who are entirely independent of the American Telephone and Telegraph Company?

A. Yes, sir, the controlling interest in the Cincinnati Company is owned by Mr. Kilgore and his associates, practically locally owned. I think 68 per cent of the stock of the Cincinnati Company is owned in the territory of the Cincinnati Company.

Q. How many directors has your company?

A. Eight.

[fol. 8630] Q. How many, if any, of these directors are associated with the American Telephone and Telegraph Company?

A. Only one, Mr. H. B. Thayer.

Q. Has the American Company ever been represented on the Board of your company by more than one director?

A. No, sir, only one director.

Q. Has your company an Executive Committee, and, if so, of how many members does it consist?

A. The president of the company, the company has an

Executive Committee, consisting of the president, or vice-president and four directors.

Q. Tell the Commission whether any member of the Executive Committee is connected with the American Telephone and Telegraph Company?

A. No, sir.

Q. Have any of the members of the Executive Committee of your company ever been connected with the American Telephone and Telegraph Company?

A. No, sir.

Q. To what extent have the affairs of your company been controlled by its own Board of Directors and Executive Committee?

Mr. Shuler: I object to the question.

Commissioner Poor: What is the purpose of that, Mr. Burr?

Mr. Burr: To show that the company operates, so to speak, on its own bottom and independently of any companies.

Mr. Shuler: How would this witness know, anyhow?

Mr. Dotson: Control is a relative question. It might be [fol. 8631] controlled by one man although there might be eight on the Board. One man might run it.

Mr. Gentsch: The assumption is that they do, the presumption is that they do.

Commissioner Poor: I think that speaks for itself on showing the personnel of the Executive Committee and Board of Directors. The objection is sustained.

Mr. Burr: Note an exception.

Q. By what Board or Committee are the affairs of your company controlled?

Mr. Shuler: I object to the question.

Commissioner Poor: The objection is overruled.

Mr. Shuler: Why, how can you prove by this witness that fact? The regulations and bylaws of the company are the evidence of that.

Commissioner Poor: This witness may know it.

Mr. Shuler: Do you allow secondary evidence to go in without primary evidence?

Commissioner Poor: This witness may know it.

The Witness: By the Executive Committee of the Cincinnati Company.

Mr. Shuler: Of course that is absolutely contrary to the law of Ohio.

Q. What has the Board of Directors to do with the management of your particular company, and when I say "board of Directors" I mean your Board?

Mr. Shuler: I object to the question.

[fol. 8632] And thereupon the Commission overruled the above objection, to which ruling of the Commission counsel for the cities excepted.

A. The Board of Directors of the Cincinnati Company absolutely control the operations and policies of the Cincinnati Company.

Q. To what extent, if any, have the representatives of the American Telephone and Telegraph Company or its associated and allied interest participated in the management or direction of the affairs of your company, so far as you know?

A. The representatives of the American Company or its associated allied companies have never actively participated in the management of the Cincinnati Company; in fact, no director, no representative of the American Company as director, has ever attended a director's meeting of the Cincinnati Company with one exception, and that was on the occasion when Mr. H. B. Thayer made a visit to Cincinnati. I think that was in December, 1920, on which occasion he made an inspection of the property and addressed the employees. At the particular meeting that I mention, there was no particular business transacted.

Q. Does your company pay any portion or percentage of its receipts or earnings to the American Telephone and Telegraph Company?

A. The Cincinnati Company pays 4½ per cent of its gross earnings to the American Company under the so-called license contract.

Mr. Hagelbarger: I object to the question. I should have objected earlier. I am asking now if it is understood [fol. 8633] by the Commission and everybody concerned that if one attorney objects, he objects for each and all of

the cities that are represented, and if one excepts the exception is for the benefit of each and all.

Commissioner Poor: That is agreeable to the Commission.

Mr. Burr: We have no objection.

Mr. Hagelbarger: You do not object to that?

Mr. Burr: Oh, no.

Commissioner Poor: The objection is well taken and will be sustained.

Mr. Burr: Do I understand that the Commission will not permit this witness to testify that his company pays for and receives the services under the license contract? The purpose of the testimony of the witness is to show that his company, although an independent company, nevertheless considers the license contract and the services rendered under it of sufficient value to subscriber and pay for this service.

Commissioner Poor: The Commission feels that it is immaterial to the case before us. The Cincinnati and Suburban Bell Company is not a party to the proceeding in any way, and what some other company may say the A. T. & T. or what services some other company may get from the A. T. & T. has no bearing on what services, and the value of them, are rendered to the company under investigation by the Commission.

Mr Burr: The materiality of the testimony is in this, [fol 8634] your Honor. The American Company furnishes the service under the license contract, first to the associated Bell companies, and of course the gentlemen on the other side are questioning the propriety of that payment and the value of the services rendered. Now, here we propose to show is an independent company, which is not controlled by the American Company at all, but which voluntarily purchases the services and pays for them the sum that any associated Bell company pays, and that in our judgment reflects directly upon the value of these services, that is to say, whether or not this contract is justified, because if the contract between the Cincinnati and Suburban Company on the one hand and the American Company on the other is one entered into by the Cincinnati Company without being in any way influenced by the American Company and as an entirely free agent, without any stock ownership or control or anything of that sort, it certainly is the

best evidence that I can think of of the fairness of this contract. I might say further that testimony of this sort has been received and admitted in evidence in many other cases similar to this.

Mr. Dotson: Over objection? Now, Your Honor, it seems to me that the Commission is absolutely right, that it cannot be wrong in this ruling, because it is tantamout to a case of Mr. Burr, for instance, making a contract with one of the attorneys here to render certain services, and he turns around and enters into a similar contract with me to render [fol. 8635] those same services. Now, he gets into a controversy with the other party. He proposes now to prove his case against the other party by proving the kind of contract that he has and the agreeableness of that contract between him and me. Of course that is absolutely foreign. The Commission is absolutely right that it is immaterial. This whole controversy is over the question of the fairness of this charge and the value of the services rendered by the A. T. & T. Company to the associated companies, which it is admitted are owned and controlled body and soul by the A. T. & T. Company. The A. T. & T. Company absolutely holds the whip hand and can control the affairs of the associated companies in every respect, whereas the Cincinnati Company is not, and we will admit that it is perfectly free to make any contract it pleases. But whatever contract it does make with the A. T. & T. Company cannot in any respect reflect any materiality upon the contract that exists between it and the associated companies.

Mr. Burr: Your very argument proves my point, Mr. Dotson. You gentlemen on the other side shout your heads off about the control by the American Company of the Ohio Bell Telephone Company, and you say that one reason why this reason why this contract on its face is unfair, is because it is entered into by a so-called controlled company. And now we come in here and offer evidence of a company which is not controlled, as you concede, not controlled in [fol. 8636] any way, but which considers these services so valuable that voluntarily it avails itself of the benefits of this contract, and pays precisely the same amount in per cent as paid by the Ohio Bell and the other associated companies for these services.

Mr. Dotson: But, Mr. Burr, you started with the assumption and expected the Commission to assume that the con-

tract you have with the Cincinnati Company is identical with this contract that is under investigation.

Mr. Burr: I cannot make my case all at on-e.

Mr. Dotson: And that the services are the same. Yes, but then you can not make, as the Commission says, your case by trying to prove it through some evidence that is wholly irrelevant, which constitutes an entirely different transaction between different parties, and we would have to — here day after day to find out whether they are the same contract, and find if on that basis they could be admitted.

Mr. Burr: I can show you that in two minutes.

Mr. Dotson: No, you can't.

Commissioner Poor: The Commission does not say at this time that Mr. McBurney can not testify as to whether these services performed by the A. T. & T. Company to the Ohio Bell are valuable, but at this time in the investigation before the Commission it is immaterial to show what the services rendered by the A. T. & T. Company to the Cincinnati and Suburban Bell Telephone Company are and their value.

Mr. Burr: I was not attempting to show that.

[fol. 8637] Commissioner Poor: I cannot see the materiality at the present time of showing the value of the services of the A. T. & T. to the Cincinnati and Suburban Bell in a case which involves only Ohio Bell.

Mr. Dotson: Surely if a controversy of this kind arises between the A. T. & T. Company and Toledo Exchange, in trying to check the value of these services to the Toledo Exchange, surely it would not be permitted to show what the value of its services are to Cleveland in order to prove what the value of the services are to Toledo. That is coming nearer home. And yet that would not be consistent.

Commissioner Poor: If Mr. McBurney knows what the services are performed by the A. T. & T. Company for The Ohio Bell and qualifies in regard to that, he may testify as to their value to the Ohio Bell.

Mr. Burr: Note my exception to the Commission's ruling.

Q. Has your company a contract with the American Telephone and Telegraph Company covering services to be rendered by the latter company to your company?

Mr. Dotson: I object.

Mr. Burr: He can answer that by yes or no.

The Witness: Yes.

Mr. Hagelbarger: It is absolutely immaterial. There is no use going into it.

Commissioner Poor: I think it is immaterial.

Mr. Burr: Note an exception.

[fol. 8638] Q. Are you familiar with the services rendered by the American Telephone and Telegraph Company under the so-called license contract with its associated companies?

Mr. Gentsch: I object. That assumes that that contract is all the same and that he knows it is the same.

Mr. Burr: Why don't you let me prove it and then we won't have to assume it.

Mr. Gentsch: You are a pretty good lawyer, Mr. Burr, but I have been sitting here for one day and I have been surprised at some questions, and here is one of them.

Commissioner Poor: The objection to that question is overruled.

The Witness: Will you read the question?

Question read.

The Witness: I am in a general way and I have heard the testimony of the services rendered by the American Telephone and Telegraph Company to its licensed companies in a number of cases.

Q. Do you know how much the Ohio Bell Telephone Company pays to the American Company for its services?

Mr. Hagelbarger: I object.

The Witness: I understand 4½ per cent of its gross earnings.

And thereupon counsel for the cities moved to strike out the above answer.

Commissioner Poor: Do you know? That is the question.

The Witness: I understand so. I could not definitely [fol. 8639] say that I know, that is, I have never seen a check and examined it.

Q. Does your company receive from the American Company similar services to those rendered by the American Company to the Ohio Bell Telephone Company under the license contract between those two companies?

Question objected to by counsel for the cities; question subsequently withdrawn.

Q. Do you know the character of the services furnished by the American Telephone and Telegraph Company to the Ohio Bell Telephone Company under the so-called license contract existing between those two companies?

Mr. Dotson: That can be answered by yes or no.

Mr. Burr: I suppose you will object to that, because you will say there is no contract in evidence.

Mr. Dotson: Assuming the fact.

Mr. Burr: We have been talking about that fact——

Mr. Gentsch: It is assuming that he knows.

Commissioner Poor: The question is, does he know?

Commissioner Maullar: He has already answered that question. He says he only knows from the testimony of other witnesses. It is merely hearsay.

Mr. Shuler: In other cases.

Question read.

Mr. Miller: He was asked that question before and he answered that he knew only from the testimony of other witnesses.

Mr. Burr: No, he did not *any* only from the testimony [fol. 8640] of other witnesses.

Mr. Gentsch: He said he understood. That was his answer.

Commissioner Poor: The objection is overruled.

The Witness: I have read the contract that the Ohio Bell Telephone Company has with the American Company and I assume that the American Company performs the services mentioned under that contract.

Mr. Dotson: We ask that that be stricken out.

Mr. Burr: Yes, his assumption may go out.

Mr. Shuler: That is, the answer to it?

Mr. Burr: No, where he says he assumes.

Mr. Dotson: His answer does not amount to anything if you take out the word "assume" because that is the basis of his answer.

Mr. Burr: Will you listen to his answer? I will have it read.

Question and answer read.

Mr. Dotson: There you are. He assumes it only.

Mr. Burr: He has read the contract.

Mr. Miller: No, that is not responsive.

Commissioner Maullar: As the record stands, he has just read the contract.

Mr. Miller: That is not responsive to the question. The question is what service. He says he has read the contract.

Mr. Dotson: In his own mind he has nothing stronger to assure him of it than an assumption, and we must take [fol. 8641] him at his word on that.

Commissioner Poor: The answer is not responsive.

Mr. Gentsch: I think the answer ought to stay in. Now, somebody is laughing around here. I think I can satisfy everybody I am right.

Mr. Burr: I am not laughing at you, Mr. Gentsch. I think you are right. I am simply laughing at the inconsistency of gentlemen at the table taken as a whole.

Mr. Gentsch: That isn't any different than was shown yesterday, because you ought to have gone out and had a conference with one of your witnesses. This answer should stand because it shows exactly what this man knows and shows conclusively that he is not a competent witness upon the matter which Mr. Burr is trying to bring out. I say that in spite of the fact that I know that the answer is not responsive to the question. The answer does show that he doesn't know anything about it. That is the main thing.

Commissioner Poor: What is there before the Commission? I don't know whether there is a motion to leave the answer in or a motion of the solicitors to strike out the answer as not being responsive.

Mr. McConnaughey: There is a motion to strike the answer out as not responsive to that question.

Commissioner Poor: That will be sustained.

Q. Have you in your possession a copy of a paper writing consisting of a certain number of pages of white paper, on the outside cover of which there is typed in black ink the words, "Agreement between American Telephone and Tele- [fol. 8642] graph Company and the Cincinnati and Suburban Bell Telephone Company, covering telephone services, licenses and privileges"?

A. I have.

Mr. Dotson: Just a moment. I want to object for the reason that the question is double barreled. First it asks whether he has such a thing, a contract in writing between those two, and then he goes on to state to us whether it is a contract covering certain things.

Mr. Burr: I did not ask him any such thing. I asked him whether it showed on a printed page—on the cover of it I should say—a certain legend. That is all.

Question read.

Mr. Dotson: Is that all on there, "Covering telephone services, licenses and privileges"?

Mr. Burr: Yes, but lest that offend you too much——

Mr. Dotson: No, if it is on there, all right.

Mr. Burr: For identification the document, consisting of 13 pages of typewritten matter, is marked McBurney Exhibit No. 1.

Mr. Dotson: Is that in the record?

Mr. Burr: Get that in the record. I want all of this talk in the record, if you please.

And thereupon the paper writing above referred to was marked for the purposes of identification as McBurney Exhibit No. 1.

[fol. 8643] Mr. Burr: We will now proceed to make up our record on this phase of the case. Let the record show that if the following question, "Does your company pay any portion of percentage of its receipts or earnings to the American Telephone and Telegraph Company?" would, if propounded to the witness, be answered, "Yes".

If the following question, "What amount?" were propounded to the witness, the witness would answer as follows, "Our company pays 4½ per cent of its earnings to the American Company under the so-called license contract."

Also the following questions and answers:

"Q. Is a copy of that contract the paper writing which has heretofore been identified by you and marked for identification McBurney Exhibit No. 1?

"A. It is.

"Q. Please state in detail the items of revenue upon which the 4½ per cent payment made by your company to the American Company is based.

"A. The items comprising the payment are the total of the subscribers' station revenues, public pay station revenues, private exchange line revenues and message toll revenues, less uncollectable revenues.

"Q. When the contract marked McBurney Exhibit No. 1 was entered into between your company and the American Telephone and Telegraph Company, was the management

and control of your company's affairs entirely independent of the American Company?

"A. Yes, sir.

"Q. Did the American Company at that time own any more than 30 per cent of the stock of your company?

"A. No, sir.

[fol. 8644] "Q. Was it at that time represented on the Board of your company by more than one director?

"A. No, sir.

"Q. What is your judgment as an officer of the Cincinnati and Suburban Bell Telephone Company and as an experienced telephone man, as to whether or not the use of the property furnished to your company by the American Company and the services furnished in addition to such property under the license contract between the American Company and your company are worth the amount paid therefor by your company as provided in the contract marked McBurney Exhibit No. 1?

"A. I believe that they are worth as much and much more than the amount paid for them by our company.

"Q. What in your judgment is the value to your company of the services furnished under the contract marked McBurney Exhibit No. 1?

"A. In my judgment that contract, which is the so-called license contract between the American Company and our company, is invaluable to our company.

"Q. What are your reasons for that answer?

"A. Because, entirely apart from the question of price, the services rendered under the contract are not obtainable or available to our company from any other source. In a company such as ours, we are not financially able to maintain the personnel necessary to perform the extensive work, including research and experimental work necessary to evolve and develop the new and improved methods and apparatus of the Bell system. Even if the necessary personnel and funds were available, we would not have at our disposal, [fol. 8645] as we now have, the experience, the cumulative experience of all of the Bell companies, and no doubt a great portion of any work done by our company would be merely a duplication of work already done by some other company and as to which we now have the benefit under the contract whenever such work is done. The contract is not only valuable to our company on account of value heretofore received

under it, but as a guarantee or assurance for the future that the Cincinnati Company will enjoy the benefits of future developments in the art of telephony as the development and research work of the American Company progresses.

"Q. Why does the Cincinnati Company continue the arrangement whereby it pays this percentage of certain of its gross receipts to the American Telephone and Telegraph Company under the contract?

"A. Because it desires to continue an arrangement which actual operation has shown to be profitable and generally satisfactory to it, that is to say, to the Cincinnati Company.

"Q. If the Cincinnati Company did not now have the so-called license contract, would you, as an officer of that company, be in favor of negotiating such a contract as is covered by your Exhibit No. 1 with the American Company?

"A. Yes, sir, I certainly would.

"Q. Do you know whether or not the associated Bell Companies pay to the American Company on the same basis as your company pays for the same or similar services [fol. 8646] rendered under the contract?

"A. That is my understanding.

"Q. In brief, what are some of the services performed by the American Company for your company under the contract, McBurney Exhibit No. 1?

"A. The representatives of the general staff of the American Company visit Cincinnati from time to time and almost continuously at our request for consultation and advice on various matters relating to the business of the company. Representatives of our company also go to New York from time to time for conference with the representatives of the general staff. The relationship is a continuing one and there is a constant flow of communication between the two companies by way of correspondence, telephone messages and personal interviews. There are many specific matters of great importance to our company, in which the American Company has been of inestimable value to us during recent years, but it is perhaps sufficient to say that the American Company has never refused our requests for advice and assistance, and in addition to complying with our requests in those respects, *has* frequently and constantly does offer its services and advice and the results of its work to our company.

"Q. In addition to the furnishing of advice and consul-

tation, does the American Company furnish to your company under the contract any instrument service?

"A. Yes, it furnishes us the instrument service, a description of which will be found in the contract marked McBurney Exhibit No. 1.

[fol. 8647] "Q. What are some of the other rights secured to your company by the contract?

"A. The right to use all patents covering the telephone art and secured by the American Company from time to time, with protection and defense against infringement suits; the right to new and improved apparatus and developments in the art of telephony resulting from the research and development work conducted by the American Company; also advice and assistance in general engineering, plant, traffic, operating, commercial, accounting, patent, legal, administrative and other matters connected with the conduct of the telephone business; advice and assistance in financing, although it should be added that the Cincinnati Company has never had occasion to avail itself of the financial service and assistance of the American Company under the contract, having been able up to this time to successfully finance its own requirements.

"Q. Approximately how long has your company had the benefits of the services and property furnished by the American Company under the license contract?

"A. Since the first day of May, 1882, the present contract being the last or latest one between the companies and being the last of a series of contracts between them, covering the subject and dating back as I have said to May first, 1882."

Mr. Burr: You may cross examine.

Mr. Dotson: No cross examination.

Mr. Burr: If there is no cross examination, Mr. Kositzky may be sworn and take the stand.

[fol. 8648] And also G. A. Kositzky, called as a witness, on behalf of the Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. Please state your name.

A. G. A. Kositzky.

Q. What is your position with the Ohio Bell Telephone?

A. Chief engineer.

Q. How long have you occupied that position?

A. Since the formation of the Ohio Bell which I believe was the latter part of 1920.

Q. Prior to that date what, if any, experience have you had in the telephone business?

A. Starting in the year 1905 I entered the employ of the New York and New Jersey Telephone Company.

Q. Before you state that, where did you go to college?

A. I studied engineering and mechanics at the University of Nebraska in the year 1896 to 1901. In the years 1904 and 5, a period of two years, I studied electrical and mechanical engineering at Ithaca, New York. I graduated from this institution in the year 1905, with the degree of mechanical engineer.

Q. Now proceed, if you please.

A. After graduation in 1905, I entered the employ of the New York and New Jersey Telephone Company, headquarters Brooklyn, New York. This was the Long Island Division. My first experience was that of writing specifications, preparing estimates, estimating costs of work, of [fol. 8649] telephone plant work. This position I held for about a year, at which time I was promoted to the office of construction engineer, covering the territory of Brooklyn and the immediate suburbs, or all of Kings County and part of Queens County. This position I held until 1909. During the period while I was in this position as construction engineer, the telephone company experienced a tremendous growth, and practically the entire aerial plant at Brooklyn was rebuilt. A number of new methods were adopted at that time and employed in the rebuilding of the aerial plant, also a great deal of underground work was done, among which was a toll cable, and the first one of its kind, between Brooklyn and Farmingdale, a distance of about 30 miles. This was all underground. In 1909 I was loaned to the Pacific Telephone and Telegraph Company at San Francisco.

Q. Just a moment before you go to that. What do you say was the amount of plant added during the period from 1906 to 1909 while you were in the employ of the New York and New Jersey Telephone Company?

A. They had a very heavy construction program, at least, so considered at that time, and I should estimate around

between fifteen and twenty million dollars gross construction costs.

Q. You had to do with all of that work did you?

A. All of the outside work, yes. In 1909 I was loaned to the Pacific Telephone & Telegraph Company at San Francisco, and had to do not only with their construction work [fol. 8650] but also the reorganization of the plant department, particularly the plant engineering department. I was the division engineer of that company first at San Francisco, then transferred to Los Angeles, Portland, Seattle, Spokane, and had general charge you might say of all the outside construction work during this period. They had quite an extensive program, and it was necessary for them to get outside help, and I was one of the few men that were sent out there to help them.

In 1910 I returned to New York and was engaged in general work, mostly engineering, consulting work, of upstate New York. At that time or just prior to this time, three separate Bell companies outside of New York City, and what we call up-state New York, were amalgamated or consolidated into the New York State Telephone, the Hudson River Company at Albany, the Central New York, with headquarters at Syracuse, and I think the Buffalo Telephone Company, at least, their headquarters were at Buffalo. They had a great deal of work to do besides reorganization work, and I was detailed to help out in that particular program.

In 1911 I was transferred to St. Louis as plant engineer with the Old Bell of Missouri, which was a Bell Company, operating mostly in St. Louis and vicinity.

And the following year I was transferred to Kansas City.

Q. What were your duties before you went to Kansas City with the Bell of Missouri?

A. The duties of a plant engineer. That was my po- [fol. 8651] sition. Not only to supervise engineering of all plant work, but also to have engineering supervision over all construction work. My duties of course were that class of work.

In Kansas City I was promoted to the position of general superintendent of plant for the Missouri and Kansas Company. This company covered the territory of Kansas and a part of Missouri not covered by the Bell of Missouri. I held this position for about five years, until 1917, and during this period I had charge of the engineering work,

construction work, maintenance of the property, and a great deal of valuation work. The commissions in Kansas and Missouri were formed about this time, in 1911 and '12, and of course we were entering into the valuation game and had to do a great deal of inventory work and development of units costs, and we organized systematically to handle this work.

About 1917 the various Bell companies in the southwest, such as the Bell of Missouri and Kansas Company and four or five others were consolidated, if I may use that word, into the Southwestern Bell Telephone Company, which operates in the five states in the southwest, comprising Missouri, Kansas, Oklahoma, Arkansas and Texas.

I was transferred at this time to St. Louis, reporting to the operating vice-president, and had general supervision of plant operations and also inventory and appraisal work.

[fol. 8652] Q. That is covering what states?

A. The five states that I mentioned.

Q. Missouri, Kansas, Oklahoma, Arkansas and Texas?

A. Yes, sir. In the year 19——

Q. Just a moment. What connection if any did you have with the so-called Houston case which has been recently decided by the United States Supreme Court?

A. In the year 1917, when I was transferred to this position, it was for another purpose in addition to supervision of plant operation, that is, to help out in this particular case, which at that time or about that time was started, that is, the Houston case. We inventoried and appraised the property, and for a little over one year, I had charge of the valuation and the expert work. I might say also that in Texas at that time we had the Ft. Worth case, which was heard and decided ahead of the Houston case. The Houston case was prolonged probably largely because of the period of federal control, and I was no longer connected with that company when it was decided.

Q. Are you familiar with the license contract which was in issue in that case?

A. Yes, sir.

Q. Were you familiar with it at that time?

A. Yes.

Q. Are you familiar with the license contract in issue in this case?

A. Yes, sir.

Q. And the services furnished your company under it?

A. Yes, sir.

Q. What will you say as to whether or not the character of the services furnished under the license contract involved [fol. 8653] in the Houston case and in this case were substantially the same?

A. They are the same except——

Mr. Gentsch: I object. It may be that I am out of order, but my understanding of that case was when it was decided that the matter of the 4½ per cent contract just went by default in the evidence. There was no issue raised on that proposition.

Mr. Burr: Quite the contrary. One of the most, if not the most, important issues in the entire case was the propriety of the license contract and the payments made under it.

Mr. Gentsch: As I understand, the city presented no evidence in opposition to that.

Commissioner Poor: The objection will be overruled.

Mr. Gentsch: Note an exception.

The Witness: The payments are substantially the same. The service was the same except of course as they have been improved upon from time to time. We get more services today because of the advance in the art. But generally they have the same call on the A. T. & T. Company as the Ohio Bell Company. I think Mr. McBurney was a witness in that case.

Mr. Gentsch: I ask to have that answer stricken out.

Commissioner Poor: Did you answer?

Mr. Gentsch: Yes.

Mr. Miller: If the Commission please, the decision in [fol. 8654] that case was made on the record in that case, which may be vastly different from the record in this case. The Supreme Court only considered the evidence that was introduced there, and the court said in that case that under the state of the record there was practically no evidence showing the unreasonableness of the contract.

Commissioner Poor: That is this, Mr. Miller. We are not trying that case. We have gone thus far with this witness to find whether he has been familiar with the contract involved in that case.

Mr. Miller: How is that material in this case?

Mr. Burr: We have not at all asked him about the record in that case. I am asking him about a question of facts.

Mr. Gentsch: It goes to the materiality of the question. What relevancy does it have here anyhow, whether he was familiar with it or not? He is trying to make a comparison here. That is the object of the question, and I say that that is utterly incompetent.

Commissioner Poor: The latter part of the answer relative to Mr. McBurney may be stricken out.

Mr. Gentsch: Note an exception.

Q. During the time that you were with the Southwestern Bell Telephone Company, to what extent if any did you inventory and appraise any of the property of that company, and particularly the Missouri and Kansas property?

Mr. Shuler: Is the purpose of this simply to qualify [fol. 8655] him?

Mr. Burr: That is true.

The Witness: I had supervision or direct charge of all the inventorying and appraising all of the Missouri and Kansas property, a great deal of the property in Texas, much of the property in Missouri, the Bell of Missouri, particularly that of St. Louis and considerable in Arkansas.

Q. After your service with the Southwestern Company what did you do?

A. I was then transferred to Chicago and promoted to the position of chief engineer for the Central Union Company. This was in 1919. The Central Union at that time comprised the telephone properties of Illinois, Indiana and Chicago outside of the cities—I mean Ohio, outside of the cities of Chicago, Cincinnati and Cleveland. This position I held until the properties of the Central Union were divided into state organizations and the formation of the Ohio Bell and the amalgamation of the properties in Ohio of the former Cleveland Company, parts of the Chesapeake and Potomac in Ohio, and the Central Union of Ohio, at which time I was transferred to Cleveland, and I have held that position—I am holding that position now.

Q. During all of this experience, how much telephone property have you either appraised or how much of its appraisal have you supervised?

A. Oh, I should say about $100,000,000 of property, telephone property.

Q. How much telephone property have you engineered or constructed or supervised with reference to the engi-
[fol. 8656] neering and construction during that period?

A. That is the entire period of my telephone experience?

Q. Yes.

A. I should say considerably over a hundred million.

Q. I forgot to ask you, did you ever have any experience prior to your telephone experience?

A. What kind of experience? I have had a great deal of experience.

Q. What did you do between the years 1901 and 1904?

A. Most of the time I was engaged in working for a contractor, building contractor in Bismarck, North Dakota, and the rest of the time I was punching cattle.

Q. On a range?

A. My father's range.

Q. Are you a member of any engineering societies?

A. Yes, sir.

Q. What are they?

A. The Cleveland Engineering Society. I am a member of the American Institute of Electrical Engineers.

Q. During your 19 years of experience in the telephone business, have you had anything to do with the engineering work connected with the merger and physical consolidation of telephone properties?

A. Yes, sir.

Q. In general what has been your experience in that line of work?

A. Outside of the state of Ohio I had to do with the merger work in Topeka, Kansas, St. Joseph, Dallas, Texas, Indianapolis, Kansas City—oh, a number of other cities of lesser importance, and we are now engaged in Ohio merging the properties here.

Q. Give some approximation if you please of the size
[fol. 8657] of the job in Ohio.

A. There are 46 points or exchanges at which there was dual service, involving something like three to four hundred thousand stations of both companies, and the work has now been in progress over two years, engineering work is just about completed and the construction work in many places pretty well along, and in others we have of course completed the work. In dollars I should say it is costing around about twelve or thirteen million dollars.

Q. We have been referring to the consolidation of serv-

ice. I assume you mean the consolidation of the service of the two companies, the two former companies, the Ohio State Telephone Company and the Ohio Bell Telephone Company, which as constituent companies were in September 1921 consolidated into the present Ohio Bell Telephone Company.

A. Yes, sir. We have also at a number of other points in Ohio—the Sandusky Home and the Springfield Xenia properties—consolidated, that work being completed. We now have permission to proceed with the work at upper Sandusky and in Tuscarawas county.

Q. And the property formerly owned by the Chesapeake and Potomac Telephone Company in southeastern Ohio has been and is being consolidated with the property of the Ohio Bell Telephone Company as constituted in September, 1921.

A. You mean the Ohio State. The Chesapeake and Potomac was a Bell company and they merely transferred their property to the Ohio Bell, and the Ohio Bell proceeded to consolidate that property with the competing state property.

[fol. 8658] When I said consolidation of the property, I referred to the physical consolidation of the property.

A. Yes.

Q. In your capacity as chief engineer of the Ohio Bell Telephone Company, are you familiar with the cost and prices of telephone plant and equipment prevailing at the present time and during the past few years?

A. Generally, yes.

Q. Were you present and did you hear Mr. Rhodes, Mr. Allen and Mr. Crunden's testimony during the week of February 25th on the subject of the services rendered by the American Telephone and Telegraph Company to the Ohio Bell Telephone Company under the license contract which is in evidence in this case?

A. Yes, I was.

Q. Do you know whether or not the Ohio Bell Telephone Company and its predecessors here in Ohio have received the services mentioned by those gentlemen?

A. Yes, sir, I do.

Q. Are you free to go to the general staff of the American Company with problems and questions which confront your company from time to time?

A. Yes. We know that the A. T. & T. organization in New York is composed of a large corps of experts, representing every branch of the telephone business, who are always ready to assist us and give us advice along any line that we wish to seek it. I can further state that we have availed ourselves of these services and talent, and we go to them whenever we need their help or assistance.

[fol. 8659] Q. When your company has any special problems or questions to be solved, tell the Commission just how such matters are handled as between your company and the American Company.

Mr. Dotson: We object to that question, because there is nothing to indicate that it will relate to any matter that pertains to this inquiry. It seems to me that the question should be directed or made in such form as will direct the witness' attention to matters that are under inquiry.

Mr. Burr: The question is withdrawn. Excuse me for the interruption. It will save time.

Q. Whenever your company desires to avail itself of the services of the general staff of the American Company pursuant to the license contract, just how do you go about the matter, just how do you go about handling cases of that character?

A. We know that they have a force of competent experts in every branch of the telephone business who have had experience in every state in the Union and who have had problems of almost every nature that might come up. And knowing this, we first consult them when we have any special problem, as there are always several solutions to any particular problem, and because of their wide experience they can very frequently and generally do direct us to the best method of solving these particular problems. The result is that the Ohio Bell has saved a great deal of time and expense, in that it is not necessary for us to experiment you might say.

[fol. 8660] Q. By what means or through what agencies are these problems taken up with the American Company from time to time?

A. Different ways, through correspondence, telephone conversations, telegraph. They send representatives to Ohio at our request or whenever they feel that a problem can better be handled in that manner, or we send our men,

our engineers and others to New York whenever that is the most expedient thing to do.

Q. To what extent if any does the American Company keep the Ohio Bell Telephone Company informed on the subject of developments in the telephone industry and the art as applied to that industry?

A. They keep us constantly in touch with all of the developments in the Department of Development and Research, legal, accounting, engineering, and all matters pertaining to the operation of the telephone plant.

Q. How is that done?

A. Through commercial bulletins, correspondence, circular letters, commercial bulletins; specifications, general engineering circulars, traffic circulars mentioned by Mr. Anthony yesterday and in many different ways.

Q. Do you receive any commercial services in that connection?

A. Yes, commercial bulletins I believe I mentioned and services of all kinds.

Q. What recent work has been done by the American Company in connection with the consideration of outside plant engineering practices if you know?

A. They have been working on this question for some time [fol. 8661] and have recently completed a complete treatise on the most economical manner in which to engineer and design outside telephone plant. These circulars, if you call them that, have been recently considered in consultation with the engineers of various associate companies, in order to not only familiarize the associate companies with the points in this circular, but incidentally possibly we will say to receive any suggestions that the field may have before this is issued as a final circular.

Q. Has your company been consulted from time to time as one of those associated companies in this connection?

A. Yes, sir.

Q. Do you know of any instances wherein your company has been unable to receive the service or help?

A. No.

Q. Of the American Telephone and Telegraph Company?

A. No, I know of no case where we have been refused or turned down on any of our requests or when we sought information from them.

Q. Have you had any special problems in Ohio recently,

wherein the special services of the American company's General Staff were required?

A. Yes, sir, a great many. The unification work in Ohio was really an arduous problem in connection with many others that come up from time to time. I have this a little more in detail if you care to have it. I think perhaps a little bit later might be a better time to give that.

Q. Do you know of any instances wherein the General [fol. 8662] Staff of the American Company handles work of a general nature for the associated companies, including your company, such as, for example, matters before the Interstate Commerce Commission?

A. Yes, they always represent us, continuously represent us in all matters before the Interstate Commerce Commission. I might state that wherever representation of that character is general or covers several companies, they handle that work for all of the associated companies, and of course it saves us time and expense in sending an employee to whatever point these matters are handled. Not only the Interstate Commerce Commission on depreciation mentioned by Mr. Crunden, but also on all revenue matters or accounting matters, and whenever a telephone property is being considered for purchase, such as the Tuscarawas or the Upper Sandusky Company, they obtain the necessary approvals from Washington from the Interstate Commerce Commission for us.

Q. What about the matter of the income tax returns of your company under the Federal Income Tax Law?

A. They prepare our income tax reports, and we haven't that work to do.

Q. Who do you mean by "they"?

A. The A. T. & T. Company. There are a number of other cases right along that line that are fresh in my memory at this time in which they have represented us or rather handled that work for us. In Cleveland recently—this work has been going on for several years—the Cleveland Illumi- [fol. 8663] nating Company has changed its method of arc lighting from the old series arc lighting to the incandescent system. This change of course varied the amount of current which was sent over the lighting circuits, and it caused considerable interference to our service at various locations. We immediately took this up with the A. T. & T. Company, and they, realizing that this problem, although

not entirely new to them, was one that would come up in various parts of the country, sent representatives to Cleveland — undertook to handle this work entirely for us, we merely helping out with records and such incidental work as they might need in connection with other major work.

Q. How was the work taken up in Cleveland?

A. We called them, wrote to them, and told them what our difficulties were, and they immediately got in touch with the situation and saw what it really was and handled it for us.

Q. With whom did the engineers of the American Company negotiate in Cleveland if you know?

A. With the Ohio Bell Company. Another instance——

Q. Just a moment. Did they take the matter up with the Cleveland Electric Illuminating Company?

A. Oh, yes. They worked of course very closely with the Illuminating Company and received wonderful cooperation.

Another instance that we had in Cleveland recently which may be of interest, the Street Railway Company of Cleveland has adopted the remote control of sub-stations, that is, sub-stations are located in various parts of the city and particularly at points where the electric current is more [fol. 8664] economically distributed than from one central station. These formerly were attended by an employee, but they have recently developed a method by which these sub-stations could be started at the proper intervals and stopped without the assistance of an attendant, in other words, from some central point. This again involved the Ohio Bell Company, in that they made use of our cable conductors in operating this automatic equipment, and the A. T. & T. Company sent representatives to Cleveland and worked with the Street Railway Company, the Westinghouse Electric Company and others who had to do with the development of this system. I believe Cleveland will be the first city to have this remote control of sub-stations.

Q. Did any of the representatives of the North Electric Manufacturing Company assist in that matter?

A. Yes, they manufactured some of the automatic equipment, and of course were in on these experiments and the development of this system.

Q. Go back for a moment to the Cleveland Electric Illuminating Company. Tell the Commission whether or not the engineers of the American Company, in connection with

your company and your company's engineers, conferred with the engineers of any other organization or organizations in addition to the engineers of the Cleveland Electric Illuminating Company? To refresh your recollection——

A. The Ohio Bell; we were in on that of course.

Q. Were any engineers of the National Electric Light Association?

[fol. 8665] A. Oh yes, yes, they were vitally interested in it of course.

Q. Did the Westinghouse Electric Company have engineers in Cleveland in that connection?

A. I am not so sure but whether other manufacturers were also represented. This was something of course that was new and promised to be quite a development in the art and I am not sure but what in addition to the Westinghouse there were also other manufacturers of electrical apparatus.

Q. Over what period of time if you know have these negotiations between the engineers of the American Company and those of the Cleveland Electric Illuminating Company extended?

A. Several years to my knowledge. I think about two years. I know it was started at the time I came to Cleveland — they have about completed the work now.

Q. Do you know how much time approximately has been spent by the engineers of the American Company in developing the system which is now in use in Cleveland with reference to the sub-stations of the Cleveland Railway Company?

A. Well, they were working on this on and off for this period of about two years; just the exact number of man days I don't believe I can tell you at this time.

Q. What work if any have the engineers of the American Company done for your company in connection with an order of the Interstate Commerce Commission having reference to the subject of the automatic train control on the Interstate railroads of the country?

[fol. 8666] A. The Interstate Commerce Commission has ordered 94 of the railroads——

Mr. Dotson: Just a minute. How does that relate to this Bell Telephone service?

The Witness: In this way, Mr. Dotson, that that changed character of the current along the railroads, and the telephone company is vitally interested in that, in that it has

signal circuits in some instances on the railroad rights of way, in many instances adjacent, and in a great many instances overhead or across. So the introduction of a different type of signalling from that now employed that necessarily might involve or we felt would involve high tension currents up to a thousand volts, would of course have some deterimental effects to our circuits. So this matter was referred to the A. T. & T. Company, and they have men in charge to handle all this work for the associated companies, and we will receive the benefit of any recommendation which is made when this problem is solved.

Mr. Gentsch: There isn't any of that work in Ohio now, is there?

The Witness: It affects some of the railroads. There are 94.

Mr. Gentsch: But none covered by this hearing?

The Witness: Oh, yes. Ford's railroad is one that is vitally interested, the railroad from Toledo, the Toledo and Iron Mountain I believe.

Commissioner Maullar: The D. T. & I.

The Witness: Detroit, Toledo and Ironton. That has been changed in many ways. That is only another incident [fol. 8667] I might mention at this time that would have a very serious effect on the telephone properties and the A. T. & T. are handling that matter for us directly with Mr. Ford's organization.

Mr. Gentsch: On the electric train control there are no railroads in Ohio that are being affected by that?

The Witness: So far as I know they have not started any of the work in Ohio.

Mr. Gentsch: No.

The Witness: But these 94 railroads extend through Ohio and we are reasonably certain that as this work progresses it will affect Ohio and the Ohio Bell?

Mr. Gentsch: But there isn't anything now? That is the point I want to make.

The Witness: I can't answer definitely that question right at this moment.

Mr. Gentsch: Don't you know that there is not?

The Witness: I haven't any information.

Commissioner Poor: Let the Commission interrupt at this point and just before we recess. The Commission is in receipt of a letter from Mr. Eagon who testified in this case

on February 29th, calling attention to the fact that one of his answers does not appear in the stenographic record as he intended the answer to be. He calls attention to page 682, about half way down the page, where it appears in the record in the following language, "I have no doubt [fol. 8668] that the actual cash saving would be something less than that." He says that this statement is apparently in error in the stenographic notes and should read, "I have no doubt that the actual cash saving would be something in excess of that." He asks permission that the record be corrected to that extent. It means substituting the word "excess" for "less". If there is no objection we can just——

Mr. Dotson: "Something less" would read, "in excess"?

Commissioner Poor: If there is no objection the words "something less than" will be stricken out and the words "in excess" substituted.

And thereupon a recess was had until 1:30 o'clock P. M. of same day. (Thursday, March 27th, 1924.)

[fol. 8669] Thursday Afternoon Session

March 27th, 1924.

Mr. Burr: Mr. McBurney is recalled for further examination in chief.

And also BENJAMIN T. MCBURNEY, recalled as a witness, on behalf of The Ohio Bell Telephone Company, continued his testimony as follows:

Examined by Mr. Burr:

Q. Mr. McBurney, have you examined the contract between the Ohio Bell Telephone Company and the American Telephone and Telegraph Company, marked McBurney Exhibit Number 1 in this case?

A. I have.

Q. What would you say as a practical telephone man of wide telephone experience as to whether or not the services to the Ohio Bell Telephone Company under that contract would, if rendered be or prove of value to the Ohio Bell Telephone Company?

A. I should say they would prove of great value.

Q. Have you read the payment clause?

A. I have.

Q. What would you say as to whether or not the services provided for in the contract are reasonably worth the amount agreed in the contract to be paid for them.

Mr. Dotson: Now, we object. Reading a contract and [fol. 8670] knowing what the contract says and what is actually done in the field of operation are two entirely different things. It is relating performance to conditions, not the provisions of the contract which control.

Question read.

Commissioner Poor: We did not hear all of the previous question. Will you read it?

(Last two questions and answers read.)
(The pending question read.)

Mr. Dotson: I will urge my objection on the grounds mentioned, that it pertains entirely to the provisions of the contract and not to the question of services actually rendered. We are dealing with actualities, not with something that is mentioned in a contract.

Commissioner Poor: This is a hypothetical question put to this witness as an expert. He says if the services, provided for in that contract were rendered.

Mr. Dotson: Inasmuch as we have a better way of proving it, Your Honors, it seems to me we ought to avail ourselves of the better way. These are witnesses in the employ of the company, which is one of the parties to the contract, claiming to know what services are rendered, and the testimony is supposed to relate to the actual services rendered. From that we are to determine whether the services are worth the four and one half per cent on the gross receipts.

Commissioner Poor: No, I think it is the province of the Commission, and ultimately of the court to say whether [fol. 8671] it is worth that. This man is just giving his opinion.

Mr. McConnaughey: That is another ground for objection. It is not a matter for expert opinion.

Mr. Burr: Oh, yes, I think undoubtedly it is.

Commissioner Maullar: I think it is practically his opinion based on a hypothetical question, his opinion as an expert telephone man.

Mr. Dotson: That is true, but it is not the best evidence

here, Your Honor, and inasmuch as the other line of testimony is far better and more reliable and is available, this should not be admitted.

Commissioner Poor: The Commission feels that the objection is not well taken. It will be overruled.

Mr. Dotson: Note an exception.

The Witness: Read the question once more.

(Question read.)

A. I should say they were worth the amount agreed in the contract and more.

Mr. Dotson: I move that that answer be stricken out.

Commissioner Poor: Overruled.

Mr. Dotson: Note an exception.

Mr. Burr: That is all, Mr. McBurney. Will you gentlemen want Mr. McBurney to return for cross-examination?

Mr. Dotson: No, I don't.

Mr. Shuler: I would like to ask him the operating expenses per station of the Cincinnati Telephone Company.

The Witness: I could not give you that off hand, sir.

[fol. 8672] Mr. Shuler: Will you furnish that to me?

The Witness: If it is agreeable to counsel it is agreeable to me.

Mr. Burr: I do not know what materiality it has in this case.

Mr. Shuler: Well, we will show you what it has.

Commissioner Poor: What bearing on the question before us on the 4½ per cent contract and its reasonableness would this have.

Mr. Shuler: A lot of evidence has gone in on the 4½ per cent case which is supposed to be applicable to the rate cases specifically. Now for instance the 4½ per cent contract is to be applicable to each individual rate case, and I believe Mr. Schneider testified yesterday on some things that were supposed to go into the rate cases.

Commissioner Poor: They were enlarged only on stipulation and agreement of counsel.

Mr. Shuler: My purpose is to show the wastefulness of the Ohio Bell Telephone Company in the operation of the telephones.

Commissioner Poor: Well, that might be proper testimony, Mr. Shuler.

Mr. Shuler: He was here and I thought I would get it out of him while he was here.

Mr. Burr: If you could.

Q. Will you furnish that, Mr. McBurney?

A. No.

[fol. 8673] And also G. A. KOSITZKY, recalled, as a witness, on behalf of the Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. Has the American Company done any work of a national character with the National Electric Light Association on behalf of your company?

A. Yes, sir. In about 1921 committees were organized, one representing the electric light companies of the National Electric Light Association, and the other the Bell Telephone Companies. These representatives were mostly —that is, representing the Bell—Were practically all from the A. T. and T. organization. This was for the purpose of working out rules and practices as to the utilization of highways and streets and so on as between the respective wire using companies. This in a manner compliments the orders issued in certain of the states by certain state Utility Commissions. I have here a copy of the report. This is our last report, and in this report it shows the representatives of the A. T. and T. Company, for instance, John J. Carty, Bancroft Gherardi, and D. K. Hall.

Q. Are they all members of the general staff?

A. Yes, sir. And then there are sub-committees, of which Mr. Charles Wolfe, an engineer of the A. T. and T. Company, is chairman.

Q. The report of the joint General Committee referred [fol. 8674] to by the witness may be marked Kositzky Exhibit Number 1 and is offered in evidence?

A. Yes.

And thereupon the report above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky Exhibit Number 1, and made a part hereof.

Q. The foregoing are a few specific instances of services performed by the American Company for your company? Are there any others?

A. Yes, there are quite a few. I have here a list consisting of 144 pages, which just gives the number and title of general engineering circulars, of which there are 1,413, specifications of which there are 612, 52 commercial circulars and 199 traffic circulars. These the Ohio Bell has received from time to time, and its predecessor companies in Ohio, up to about the first of 1924.

Q. Now there are hundreds of pages contained in those specifications and circulars, are there not?

A. Yes, sir. There are 144 pages in the list.

Mr. Burr: The list may be marked Kositzky Exhibit Number 2 and is offered in evidence.

And thereupon the list above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company [fol. 8675] and is herewith submitted marked Kositzky Exhibit Number 2, and made a part hereof.

Q. Does the work which you have mentioned, such as development work, preparation of standards and kindred things on behalf of the Ohio Bell Telephone Company by the General Staff of the American Company save your company any time or expense?

A. Yes, we could not perform those services ourselves.

Q. You mentioned——

Mr. Gentsch: I ask that all after "yes" be stricken out. It is not responsive. That is purely a volunteered statement.

Mr. Burr: Let the part of the answer referred to by Mr. Gentsch go out.

Q. Could the organization of the Ohio Bell Telephone Company perform services for that company to the same extent as they are now performed by the American Company for it?

A. No, it could not.

Mr. Gentsch: I object. That is purely a conclusion. It is a matter for them to tell what the services were and then for this Commission to determine what if any value

they have. A comparison of that kind is not proper. It cannot be justified under any rule of evidence.

Mr. Burr: It is certainly competent for this witness to say that this company has no force of men with which to do this work.

(Question and answer withdrawn.)

[fol. 8676] Q. Has your company an organization for the purpose of performing research and development work similar to that done by the American Company for your company?

A. No, sir.

Q. Have you any other source of receiving the same assistance as that rendered by the American Company to your company?

A. No, sir.

Q. Do you know whether it would be possible or practical from the standpoint of finances alone for your company to maintain an organization which would furnish, if it could, the services now received by your company from the American Company.

Mr. Gentsch: I object to the question.

Commissioner Poor: What is the ground of the objection.

Mr. Shuler: My ground is that he does not state which one of the services he is talking about. This General Staff performs many services that are perfectly ridiculous for the Cleveland Telephone Company, for instance, radio and long distance lines and experimental work for the Western Electric. It would be silly for the Cleveland Telephone Company to attempt to perform any of those services in the first place. Secondly, what does this man, an engineer, know about the financial condition of the Cleveland Telephone Company or the operating side of it.

Mr. Gentsch: And there is another objection to that. It is about as broad in scope as can be, and it is an attempt [fol. 8677] to get in under a general question an opinion that is just about as broad as the English language can be. The question here is, what are the services that the A. T. and T. perform to either the Ohio Bell or its constituents or in the toll service, that is to be considered as part of charge which the people of Ohio ought to pay? Now if there are some services that are rendered here that are of value and that value is established, that is one thing.

But the questions that have been asked here all day, yesterday and today, have been most of them just as broad as they can be and take in the earth and put a fence around it, and calling for conclusions constantly that are clearly beyond the power of the witness to give an opinion on. I have not been objecting very much. I just got in here a little bit late and I have been a little modest, but it has been growing on me all the time just the same.

Mr. McConnaughey: The answer no, would imply that they could not perform any of those services.

Commissioner Poor: This man has qualified as head of the engineering department of the Ohio Bell Telephone Company and he should be in position to know something about what the engineering department of the Ohio Bell Company does do or can do, and if the question is limited to the Ohio Bell Company, could it do the work which the A. T. and T. does for the Ohio Bell, that will cut out the objection Mr. Shuler raises about the radio and the other propositions.

[fol. 8678] Mr. Gentsch: I think Mr. Shuler's objection goes to the vital end of it, because this is entirely too broad. And I say, the question here is what services are rendered by the A. T. and T. and what are their values? But this question goes away beyond that, and as I say it takes in—Just read it—it takes in the world and puts a fence around it.

Commissioner Poor: It must be limited to the services performed by the A. T. and T. to the Ohio Bell Telephone Company.

Mr. Burr: Note an exception.

Q. Mr. Kositzky, has that company the means of performing within its own organization the services rendered for it by the American Company under the license contract?

A. No, we have not.

Q. Do you know whether or not the cost to your company, if it would be so organized as to furnish those services for itself, would be greater or less than the amount paid for the services to the American Company.

Mr. Gentsch: I object to the question. There we are again, just as broad as it can be, taking in everything, and it assumes that all of the pretended services that are being rendered are necessary, which we deny.

Mr. Burr: It does not assume that.

Mr. Gentsch: We say a lot of this stuff that has been accumulated here is here for the purpose of making a show on paper of the things done, but there is no evidence here of any necessity for a large majority of the services which are [fol. 8679] rendered. The whole evidence here assumes that it is necessary and is of value, but there isn't any necessity shown.

Mr. McConnaughey: If the Commission please, the question, it seems to me, should be what would it cost the Ohio Bell Company to perform these services that the A. T. and T. performs for them.

Mr. Burr: I was going to ask him that next.

Mr. Gentsch: I think that is too broad.

Commissioner Poor: The question is directed to this witness' knowledge. If he don't know, he can say so. If he does not know he indicates that way. If he answers that he does know, you can go into that on cross-examination.

(Question read.)

Mr. McConnaughey: The answer is yes. "Will you have coffee or tea?" "Yes."

Mr. Burr: If he says yes, then that means that he does know.

Mr. Dotson: Are you sure that he means that.

The Witness: Yes.

Q. In your judgment, are the services worth more than the amount paid for them?

A. Yes, sir.

Mr. McConnaughey: I object.

Q. You mentioned receiving——

Mr. McConnaughey: Now wait a minute.

Mr. Gentsch: There is another objection. There is one continuous leading question put by counsel over there, put- [fol. 8680] ting words into the mouth of the witness. It has been going on all day yesterday and today. He knows better than that.

Commissioner Poor: The objection will be overruled.

Mr. Gentsch: Note an exception.

Question read.

A. Yes, sir.

Q. Will you briefly point out some of the general engineering circulars, and if you have copies will you produce them so that they may be offered in evidence as exhibits?

A. Yes, there are over 2,000 circulars, bulletins and so on, and I will just point out a few hurriedly so as to save time.

Mr. Shuler: Give the dates please of the circulars.

The Witness: All right. On page 32, general engineering circular Number 473, issued July 28th, 1914 on Duplex cable. Duplex cable, as Mr. Rhodes explained quite in detail—if you care to I will be glad to say that that is a cable in which the conductors are so arranged that over two pairs of conductors a third circuit, or what is sometimes called a phantom circuit, may be used. Now to this general engineering circular are attached six specifications. I merely want to bring out that, because there are a number of specifications in this list, and there are six typical specifications which are a part of that general engineering circular on Duplex cable.

Q. What are the numbers of the specifications?

A. They are 3660, 3656, 3663, 3657, 3658, and 3591.

[fol. 8681] Q. Are there also some tables showing the combinations of quadded and non quadded conductors?

A. It also shows two tables which show the economical arrangement or set-up in order to maintain full use of the space within the maximum size sheath of a cable.

Mr. Burr: The circular may be marked Kositzky Exhibit No. 3 and is offered in evidence.

And thereupon the circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky Exhibit Number 3, and made a part hereof.

The Witness: Another sample that I have a copy of here, Mr. Burr, is shown on page 36, general engineering circular Number 327; that is issued July 1st, 1915 on toll fundamental plan. A toll fundamental plan is a study which looks towards the future as to the most economical manner in which to design and build a toll plant, the proper time to install toll cables, a proper arrangement of toll center checking points and so on.

Mr. Burr: It may be marked Kositzky Exhibit Number 4 and is offered in evidence.

And thereupon the plan above referred to was marked for the purposes of identification, and was offered and admitted in evidence on behalf of the Ohio Bell Telephone [fol. 8682] Company, and is herewith submitted, marked Kositzky Exhibit Number 4, and made a part hereof.

Q. These specifications to which you are now testifying are in addition to those covered by Mr. Rhodes' testimony are they not?

A. Yes, sir.

Q. Are they all circulars received by your company from the American Company?

A. Yes, sir. On page 68, general engineering circular Number 982, issued July 1st, 1920, on non-multiple private branch exchange switchboards for operation with machine switching central offices. That is a new development by the A. T. and T. Company which makes it entirely possible to connect an automatic private branch exchange, or rather a private branch exchange with an automatic system, in a manner so that direct supervision and through dialing may be had.

Commissioner Maullar: What is the date of that circular?

The Witness: July 1st, 1920.

Mr. Burr: It may be marked Kositzky Exhibit Number 5, and we offer it in evidence.

And thereupon the circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted, marked Kositzky Exhibit Number 5, and made a part hereof.

[fol. 8683] Mr. Shuler: Are all these exhibits in addition to the exhibits we had at the previous hearing?

Mr. Burr: Yes, there is no duplication.

The Witness: I just picked out a few, those that I thought might be of interest a little later on in some other parts of the testimony which I wish to refer to specifically. On page 61, general engineering circular Number 1025, dated February 18th, 1921, on the reduction of thickness of cable sheath. I merely mention that for the reason that Mr. Rhodes dwelt at some length upon the savings effected to the associated companies, perfected because of the study of the proper thickness of cable sheath to use for various purposes in a telephone plant.

Mr. Miller: What page is that on.

The Witness: Page 61.

Mr. Burr: It may be marked Kositzky Exhibit No. 6 and is offered in evidence.

And thereupon the circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted marked Kositzky Exhibit Number 6, and made a part hereof.

Q. What is the next one?

A. Page 82, Number 1174, issued June 29th, 1922. The subject is small gauge non-quadded cables, manufactured with a staggered pair twist. That is the introduction of a cable which overcomes some of the objections under certain [fol. 8684] conditions that were experienced with the former cable, and there are many localities where it can be used to a very great advantage.

Q. Mr. Kositzky, when you refer to pages 32, 36, 68, 71 and 82 and subsequently when you refer to pages in that way, do you refer to the paging in the Kositzky Exhibit Number 2?

A. Yes, sir, that is right, yes, sir.

Mr. Burr: The last circular referred to may be marked Kositzky Exhibit Number 7 and is offered in evidence.

And thereupon the circular above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky Exhibit Number 7, and made a part hereof.

The Witness: On page 83 of Exhibit Number 2, general engineering circular No. 1187, issued August 1st, 1922, is a number 1-A transmission measuring set with a number 2 oscillator. This not only describes a new instrument devised by the A. T. and T., but also is used in order to detect troubles in the telephone plant which have been rather difficult to detect before, at least not with the same ease with which it is possible with the introduction and use of this instrument.

[fol. 8685] Mr. Burr: It may be marked Kositzky Exhibit Number 8 and is offered in evidence.

And thereupon the circular above referred to was

marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky Exhibit Number 8, and made a part hereof.

Q. Have you Exhibits typical specifications received by your company from time to time from the general staff of the American Company?

A. Yes, sir. My Exhibit Number 3 on quadded cable had attached six specifications. I have just one or two more. Page 107 of Exhibit Number 2, specification Number 2880, 6,000 pound strand. That is manufactured and inspected under this specification. That is, the material is manufactured and inspected under this specification.

Mr. Burr: It may be marked Kositzky Exhibit Number 9 and is offered in evidence.

And thereupon the specification above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky Exhibit 9, and made a part hereof.

The Witness: There is another one on page 116 of Exhibit Number 2. I don't know just the date of that. It [fol. 8686] is Number 3643. It is a provisional specification for a concrete steel re-enforcement of poles. That is the method that is designed by the A. T. and T. Company in order to re-enforce poles in order to prolong their life.

Mr. Burr: It may be marked Kositzky Exhibit Number 10 and is offered in evidence.

And thereupon the specification above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky Exhibit Number 10, and made a part hereof.

Q. What is the last specification to which you desire to call attention at this time?

A. Number 363, that is. There is just one more, on page 130, that I have copies of that you will probably want to see, and that is Number 4146, listed on page 130 of Exhibit Number 2. It is a material specification of galvanized pole steps.

Mr. Burr: It may be marked Exhibit Number 11 and is offered in evidence.

And thereupon the specification above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Ko- [fol. 8687] sitzky's Exhibit Number 11, and made a part hereof.

Q. Now you have referred to typical circulars and typical specifications. Have you samples of typical bulletins that your company has received from time to time from the American Company?

A. Yes, sir. General engineering circular Number 982, which is made an exhibit, one of the bulletins presented, includes a bulletin Number 12 and a Bulletin Number —. I will just refer to them. Also circular Number 1025. That includes bulletin Number 15. I have one on transmission equivalents.

Q. Just a moment. The Exhibit last referred to is G. E. C. 982?

A. Those are in, Mr. Burr.

Q. They are already in?

A. Yes, I merely call attention to the fact that they are attached to those exhibits as bulletins.

Mr. Burr: I see. May it be understood that they are admitted as a part of the previous exhibit to which they are attached?

The Witness: I have a bulletin that is rather interesting on transmission equivalents. It is not one that is listed in this list on Exhibit Number 2. It really is you might say the transmission engineer's Bible. It computes the transmission equivalents measured in standard units, the standard transmission unit being a mile of 19 gauge wire in cable. It takes all of the item of plant and equipment and equates them in transmission equivalents, and the combination of these equivalents tells the engineer, rather [fol. 8688] instructs him how to design his plant in order to give standard transmission.

Mr. Burr: It may be marked Kositzky Exhibit Number 12, and we offer it in evidence.

And thereupon the bulletin above referred to was

marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted marked Kositzky Exhibit Number 12 and made a part hereof.

The Witness: Another bulletin that might be of interest is Number 86 on the Number 22 type telephone repeater. I think that would be of interest since the repeater played such an important fact in the long distance transmission.

Q. What is the date of that bulletin?

A. I haven't the date here. It is indicated on the bulletin.

Q. September, 1923, I see is the date?

A. Yes, sir.

Mr. Burr: It may be marked Kositzky Exhibit Number 13 and is offered in evidence.

And thereupon the bulletin above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted marked Kositzky Exhibit Number 13, and made a part hereof.

[fol. 8689] Q. What has the development of the repeater such as the Number 22 type permitted in the way of extension of transmission?

A. Transmission before the introduction of this repeater was about 1200 miles, and with the introduction of these repeaters, we are now able to talk 5,500 miles approximately.

Mr. Shuler: May I ask a question for my own information on that?

Mr. Burr: Yes.

Mr. Shuler: Repeaters are not used in anything but toll line business; is that right?

The Witness: That is right.

Q. Have you samples of typical commercial bulletins which are included in the list of 52 in Exhibit Number 2?

A. Yes, sir, I have on page 133 of Exhibit Number 2, quite a list of commercial bulletins, one Number 14 on commercial survey work that I think would be of interest since we do a great deal of that work in Ohio.

Mr. Burr: It may be marked Kositzky Exhibit Number 14.

And thereupon the bulletin above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted marked Kositzky Exhibit Number 14, and made a part hereof.

Q. What is the date of the circular last referred to?
[fol. 8690] A. Let's see. I haven't a copy of the circular—November 14th, 1921.

Mr. Burr: It has been marked Exhibit Number 14, and I believe has been offered in evidence. If not I will offer it now.

Q. What is the next commercial circular?
A. On page 135, Exhibit Number 2, I show two Number 49 commercial surveys, forecasts of future population; also Number 50, commercial circular, forecast of future market for telephone service.

Mr. Burr: It may be marked Kositzky Exhibit Number 15 and Kositzky Exhibit Number 16.

And thereupon the commercial circulars above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and are herewith submitted, marked Kositzky's Exhibits Numbers 15 and 16, and made a part hereof.

Mr. Shuler: May I ask a question for information?
The Witness: Yes.
Mr. Shuler: Will this give specific data or does it merely refer to other circulars for the data whereby I may project in the future the amount of telephones to be installed in Cleveland.
[fol. 8691] The Witness: This, Mr. Shuler, will tell you how to do it.
Mr. Shuler: This will tell me right here?
The Witness: All three you have there will tell you how to do it. Furthermore if you are interested, we have done that, and I think I can give you something on that, about the future population of Cleveland.
Mr. Gentsch: That is the Ohio Bell has done that.

The Witness: With the assistance of the A. T. & T.

Mr. Shuler: What I am interested in is to project into the future the number of changes and removals that we may anticipate in Cleveland.

The Witness: We do that too.

Mr. Dotson: Will that help us likewise in Toledo?

The Witness: Yes.

Q. What is the date of Kositzky Exhibit Number 15?

A. November 26th, 1923.

Mr. Burr: The gentleman on the other side will understand that the exhibit of course speaks for itself and the only reason I am referring to dates here is to provide against the necessity of going back through the record and going over the exhibits at sometime in the future.

Mr. Hagelbarger: There is no objection.

Q. What is the date of Exhibit 16?

A. November 28th, 1923.

Q. How are the specifications prepared which you re- [fol. 8692] ceive from the American Company covering the methods of doing the work intended for the more general use of the working forces.

A. For the working forces, those are in convenient pocket or hand book size and they are issued directly to the working forces.

Q. How many of such handbooks for the use of the workmen of your company have you received from the American Company?

A. There is a list of 91.

Q. Have you the list there?

A. The list is included in this Exhibit Number 2.

Q. Yes. Have you some typical samples of the handbooks?

A. Yes, I have.

Q. I call your attention first to the one on substation wiring, specification 3853, which may be marked for identification as Kositzky Exhibit Number 17?

A. They are all dated, in case that is of any interest.

Q. What is the date of Exhibit 17?

A. March 1st, 1917.

And thereupon the specification above referred to was marked for the purposes of identification as Kositzky Exhibit Number 17.

Mr. Burr: The next one is the handbook on general cable splicing, specification 3912. It may be marked for identification Kositzky Exhibit Number 18, and I will ask you to state the date.

The Witness: That is January 1918.

[fol. 8693] And thereupon the handbook above referred to was marked for the purposes of identification as Kositzky Exhibit Number 18.

Mr. Burr: The next one is specification Number 3613 on underground conduit construction, which may be marked Kositzky Exhibit Number 19.

The Witness: That is one of the earlier ones. That is still up-to-date, and the date of that is 1913.

Mr. Shuler: What is that number? 18?

The Witness: 19.

And thereupon the specification above referred to was marked for the purposes of identification as Kositzky Exhibit Number 19.

Mr. Burr: The next one is specification Number 3929, serial cable construction. It may be marked Kositzky Exhibit Number 20. I will ask you to state the date of that exhibit.

The Witness: That is issued in May, 1919.

And thereupon the specification above referred to was marked for the purposes of identification as Kositzky Exhibit Number 20.

Mr. Burr: Specification Number 3926, pole line construction is the next, and is marked for identification Kositzky [fol. 8694] Exhibit Number 21. What is the date of that specification?

The Witness: That was issued in August, 1922.

And thereupon the specification above referred to was marked for the purposes of identification as Kositzky Exhibit Number 21.

Mr. Burr: Kositzky Exhibit Numbers 17 to 21 inclusive are offered in evidence.

And thereupon the specifications and handbooks above offered were admitted in evidence on behalf of the Ohio

Bell Telephone Company, and are herewith submitted, marked Kositzky Exhibits Numbers 17 to 21, and made a part hereof.

Q. For the most part are the subjects covered by the remaining specifications not in handbook form, but referred to in your Exhibit Number 21

A. They are primarily materials. We haven't specifications for all materials used. For instance, a great many of the items are manufactured by the Western Electric Company and we haven't a specification of the same type as we have for materials that are manufactured for the Western Electric or for the Bell Companies, but I have a material catalogue which might be of interest, in that it includes practically all of the materials used by the telephone company, the Ohio Bell Telephone Company as plant construc-[fol. 8695] tion. You will note in there it specifies specification numbers where the A. T. and T. have issued specifications and in cases it refers to drawings that have been furnished from time to time by the A. T. and T. Company and not necessarily in specification form, and there are other items of material that are manufactured by the Western Electric Company. This catalogue is very convenient for the use of the field forces in that it tells them what materials to use and how to order them, and in some instances where to use them.

Q. Who prepared the catalogue?

A. That was prepared in my office.

Mr. Burr: It may be marked Kositzky Exhibit Number 22 and is offered in evidence.

And thereupon the catalogue above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and is herewith submitted, marked Kositzky's Exhibit Number 22, and made a part hereof.

Q. These specifications numbers and references in this catalogue are to specifications and kindred information furnished by the American Company to your company?

A. Yes, sir, that is right. It is merely what we receive from time to time and use. For instance, on page 19, cable composite and large gauge, specification Number 3760, that is a specification for that particular cable, and you will find

it in Exhibit Number 2, just what page I cannot say, and on [fol. 8696] the other page, on page 18, is cable MM specification 4123; that is an A. T. and T. specification.

Mr. Burr: The catalogue has been marked Kositzky Exhibit 22, and we offer it in evidence.

The Witness: I was going to say on page 25 for instance, about the middle of the page, is a C. S. ground clamp, drawing Number 46 L 32. That is an A. T. and T. drawing number. There is no specification for it, but it is probably in one of the bulletins. I can't say offhand. But that gives us the information.

Mr. Dotson: But this catalogue is prepared solely by your department and not by the A. T. and T. Company?

The Witness: No, I merely show that at this point, Mr. Dotson, to give you more or less a complete list of the things we receive from the A. T. and T., and has it in the best form that I knew of to present it to you.

Mr. Dotson: It is prepared in catalogue form for your own convenience, so that you can readily get at the various kinds of equipment?

The Witness: Yes, sir. That is right.

Q. Have you some photographs which illustrate the methods and show the materials actually used in the work.

A. Yes, I have here a list fitted to photographs, which I will not go through in detail, which shows the applications of the materials, the methods that have been supplied by the A. T. and T. Company and used in our day to day construction.

[fol. 8697] Mr. Burr: The list, together with the photographs referred to in the list, are marked for identification Kositzky Exhibit No. 23 and offered in evidence in its entirety.

And thereupon the list and photographs above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and are herewith submitted, marked Kositzky Exhibit Number 23, and made a part hereof.

Q. The descriptive sheets which accompany the photographs refer to the specifications do they?

A. Yes. I tried to make these self-explanatory by show-

ing on one page the specifications which are listed in the photograph and have reference letters on the photograph, corresponding reference letters. It may be interesting to point out one or two. Take Number 1. That shows development by the A. T. and T. Company of a cable vault. This is where the cables from a single central office enters the telephone building. They come in through the ducts from the street and are supported on hangers and then they go from the vault which is usually in the basement, to the floor on which is located the main distributing frame. The peculiarity about this vault—of course vaults had been used for many years—but this particular vault or this improvement over the old vault, is that cable coming in a certain duct, the location in the conduit system is determined primarily by the position of the cable, that is, the direction [fol. 8698] it takes from the street, in that manhole. Now you cannot use any particular duct. There is a certain duct in which that cable must be placed in order to give you the best arrangement in manholes when you get into the building. You cannot take the first vacant strip without some confusion in the vault, so that this is what is called a flexible vault, designed to make it possible to bring in cables without interference, which means that the vault would be congested and the cables would be so arranged as to not be accessible; but in this particular case the cables come in and they can take any position on the frame that might be vacant without any crossing or interference, which of course means difficulty in the future if not obviated.

Q. You mean that you do away with the annoyance in the future by this method?

A. Yes, sir. Number 3 might be of interest. It shows the main distributing frame, Cables from the vault are terminated and fanned out at that place. What you see there are the protector blocks, carbons and micas and the heat coils. There are references there to the specification numbers employed and also to the materials employed.

On page 5 is merely a list of materials commonly used in serial underground house and block cable work. Those are listed in the material catalogue. This gives a photograph to give an idea of some of the materials that are commonly used in this work.

On page 6 is another photograph of materials used in [fol. 8699] pole line work.

Referring to the methods, I think Number 7 is one of interest. It shows a street in which the telephone and electric light companies use a single pole line. This practice has been under development for a number of years. The A. T. and T. were the pioneers in advocating the joint use of poles. Before the introduction of this joint use, with which the electric companies had a great deal to do and a great deal of co-operation work was necessary in order to arrange satisfactory use of the poles, as a part of the development by the A. T. and T. Company. I might mention that Mr. Rhodes was the chairman of one of the first committees in that work as early as 1910. I think the first report issued by the E. N. L. A. was by Mr. Rhodes as the chairman of that committee, and this is merely a development of the safe and satisfactory use of poles by the wire using companies.

Mr. Gentsch: Don't you have more or less trouble with interference there.

The Witness: Yes, we do. I want to bring that point out. I am glad you asked that, Mr. Gentsch. Take on page 7, you notice the electric light wires are at the top of the pole, and the point marked A, points to a service wire, not very plainly distinguishable in this photograph. That leads from the top part of the pole to a house on the left hand side. You notice that wire is clear of everything. Now down lower that heavy line about half way up the page is a telephone cable. Now telephone wires drop off from that point, although I do not [fol. 8700] see any on this picture. Yet you will note that a wire which would lead from this point to a house on the left hand side would be considerably underneath the other wires. In other words, there is a safe clearance. The same way with wires on the opposite side to houses on that side of the street. This, I might say, is also in accordance with administrative order No. 72 issued by this Commission, formerly Order Number 65. I think it might be of interest here, Mr. Burr, to show from other photographs, since Mr. Gentsch raised the point, of what happens where they are not joint, that is, the old construction where there are two pole lines on opposite sides of the street, the one carrying the electric light wires and the other carrying the telephone wires.

Mr. Burr: Just a moment. The photographs to which you are now referring and numbered 1, 2 and 3 in a separate cover may be marked as an Exhibit, Kositzky Exhibit

Number 24, and we offer the exhibit in its entirety in evidence.

And thereupon the photographs above referred to were marked for the purposes of identification as Kositzky Exhibit Number 24.

The Witness: This next set of photographs shows a duplicate pole line. You see there that either pole line is sufficiently large to carry the wires of both companies. The ones [fol. 8701] on the left hand side are electric light poles and the ones on the right side are telephone poles.

Q. Where were these photographs showing the double lines of poles in a single street taken, that is to say, those referred to in Exhibit Number 24?

A. There are several there.

Q. I will call attention to a photograph marked Number 1 in that exhibit?

A. I happen to know this particular location. These poles were set in 1920 in North Toledo, Royalton Road. The light poles were set first, but the same year the telephone poles followed.

Q. Is that in the Toledo Exchange area?

A. Yes, sir.

Q. What about Number 2?

A. Photograph Number 2 is a photograph of a similar location, where you notice the telephone poles on the right hand side of the street and there you will find sufficient space which would carry the wires on the left hand side of the street, which are electric light wires.

Q. Where was the photograph taken?

A. That was taken on Foster street in Toledo.

Mr. Dotson: I would like to ask one question. I have only one in mind anyway at this time. Photograph Number 1, the poles on the left hand side of the street, shown there, seem to carry two sets of wires. Do you know Mr. Kositzky what the lower set of wires is?

The Witness: Yes, sir, the lower set are wires of the Ohio State Company, at that time the Ohio State Telephone [fol. 8702] Company was in existence.

Mr. Dotson: And the upper wires are electric light wires?

The Witness: Yes, sir, electric light.

Mr. Dotson: How long ago was this taken?

The Witness: This picture was taken recently, but the poles were erected in 1920.

Mr. Shuler: Mr. Kositzky, wouldn't this indicate that the Ohio State people were using joint poles earlier than the Ohio Bell?

The Witness: In Toledo they were probably forced to use the other poles. I do not believe the Ohio Bell would willingly consent to its competitor using its plant to further its own business. So they no doubt used the other poles, whether by the consent of the city or not, I do not know.

Mr. Dotson: Out in this Section of Royalton Road, West Toledo, the poles used there by your company were used because a competitor was using the pole on which the electric light wires were used?

The Witness: No, that is not the point. That estimate had been submitted for approval for a new pole line on that street. It was my first visit to Toledo and I raised this same question, "Why not use this electric light pole line just built?" And my information was that they were not permitted to use it under the ordinance in Toledo, existing at that time in Toledo.

Q. Where did you get the information, do you remember [fol. 8703] that?

A. From our people.

Q. You did not get the information from Mr. Green, the city electrician?

A. No, but I asked for a copy of the ordinance and I had a copy of the ordinance which—I cannot recite it in detail—specifically states that telephone wires should not be placed on poles carrying a voltage of 300; that is the voltage limitation of that particular city ordinance.

Mr. Dotson: Do you know that in Toledo in districts like this of Royalton Road, the electric light wires and telephone wires are carried and are permitted to be carried upon the same pole lines?

The Witness: They may be now, but they were not then, Mr. Dotson.

Mr. Dotson: Well, they were at that time, because the Ohio State lines were on them.

The Witness: Yes, apparently—of course they placed their wires, whether by——

Mr. Dotson: Is there any place in Toledo——

Mr. Burr: Let him finish his answer.

Mr. Dotson: All right, weren't you through?

The Witness: No.

Mr. Dotson: Go ahead.

The Witness: I do not believe—in fact, we cannot get a permit from the city to place wires on electric light poles except some few restricted places.

Q. Do you know of any other cities in the territory served by the Ohio Bell Telephone Company where the similar [fol. 8704] restrictions exist?

A. Very few. I know of no others. But photograph Number 30 is interesting since it specifically shows the point raised by Mr. Gentsch. This is only of interest in that respect. There you have a light pole on the right hand side of the street and telephone on the left. You will note that the service wires from the electric light line, which are shown falling off from about the third pole, in passing to the residence on the left hand side practically passes very close to the telephone wires, and the same say with the telephone wires dropping from the pole on the left hand side, which is shown on the second pole, and passing to the right must necessarily pass through the electric light wires, and in this case are fairly close. Now we have more trouble, more damage to plant, oftimes to people, from conditions just such as this, which under the photograph Number 7 in the former exhibit practically is impossible.

Mr. Dotson: Now with reference to the pole line on the left side of this street in Photograph 3, the upper wires are the telephone wires, the top wires.

The Witness: Yes, sir.

Mr. Dotson: And the electric light wires are below?

The Witness: No, they are not on that pole line at all. They are on the opposite side of the street.

Mr. Dotson: What are those wires on the side of the poles on the left hand side of the street.

The Witness: Those are also telephone wires, but are [fol. 8705] covered wires.

Mr. Dotson: Those are the Ohio State wires or formerly the Ohio State wires?

The Witness: No, not those.

Mr. Dotson: They were not?

The Witness: No, I am pretty sure that those were not.

Mr. Dotson: Do you know what district that is in.

The Witness: I think that is on Burton Avenue, Toledo.

Mr. Dotson: Is that Toledo?

The Witness: Yes, sir. I might further explain, Mr. Burr, that construction is not strictly in accordance with the Commission's administrative order Number 72. If I may be permitted here to cite you to just one or two paragraphs in this order——

Q. To which construction, Mr. Kositzky, are you referring?

A. That is administrative order Number 72, issued by this Commission.

Q. Which construction do you say is not in accordance with that?

A. This last exhibit.

Q. All three photographs?

A. Yes. On Page 9 I will read paragraph 100-3, "Location of lines." Where. The same highway. Local supply lines. Joint use is generally preferable to separate lines, except sometimes in rural districts and except where the character of the circuits involved make- separate lines [fol. 8706] on the opposite sides of the highway more desirable". That exception refers to toll lines and high tension electric light wires.

Mr. McConnaughey: What are you reading from?

The Witness: This is administrative order Number 72 issued by this Commission. Page 127 is Section Number 600 which is devoted entirely to rules for jointly using wood pole lines carrying supply circuits and signal circuits. By signal circuits it means telephone, telegraph, police, fire, or any wires used for signal purposes.

On page Number 9 again paragraph 100-1, the paragraph there says:

"Sections 100 to 800, which include Number 600, inclusive, of these rules shall be observed in the construction and reconstruction of overhead and underground supply lines and signal lines and in the maintenance and operation of such lines as specified therein and operated in connection with public utilities, either privately or municipally owned."

I might put this in as an exhibit.

Mr. Dotson: Is that the exhibit referred to a moment ago?

The Witness: No.

Mr. Burr: Oh, no, this is administrative order Number 72 of the Public Utilities Commission of the State of Ohio.

Mr. McConnaughey: What is the relevancy of that.

Mr. Burr: It may be marked for identification Kositzky Exhibit Number 25. It is offered not only as illustrative [fol. 8707] of the testimony of the witness just given, but also because it shows the participation by the representatives of the American Telephone and Telegraph Company in the preparation of the data comprising the order.

Mr. McConnaughey: Where does it show that?

Mr. Burr: By reference to pages 3 and 4 you will see that the rules and regulations are the result of the cooperation of the railroads and the public utilities operating in the State of Ohio. The basis of these regulations was a tentative set of rules and specifications formulated by a general committee representing the various classes of utilities in Ohio. To these utilities who have co-operated and to the general committee on rules the Commission wishes to express its appreciation of their splendid work. Signed, The Public Utilities Commission of Ohio. Then follows personnel of the general committee, included among which are Mr. K. L. Wilkinson, of the American Telephone and Telegraph Company, referred to in Mr. Rhodes testimony. Also on page 4, you will find the name of Mr. W. M. Kraft, representative of the American Telephone and Telegraph Company, Mr. D. H. Keyes, representing the same company, and Mr. J. H. Moore, representing the same company. The exhibit is further offered as indicating something of the work necessary to be done by the wire using companies, including the General Staff of the American Company, for the Ohio Bell Company, in connection with this single matter of the joint construction by wire using companies in Ohio, and the protective meth- [fol. 8708] ods devised in connection with that construction.

The Witness: May I proceed with the photographs, Mr. Burr?

Mr. Burr: Yes. Exhibit Number 25 is offered in evidence.

And thereupon the document above referred to was offered and admitted in evidence on behalf of the Ohio Bell Telephone company, and is herewith submitted, marked Kositzky Exhibit Number 25, and made a part hereof.

The Witness: Photograph Number 11 shows the application of specification Number 3927, titled, Guying, and 2939 on aerial cable construction. Number 14 is interesting——

Q. Just a moment please. You are now referring to photographs in Exhibit Number 23?

A. Yes, sir.

Q. Proceed.

A. Number 24 is interesting. Mr. Rhodes covered quite completely underground cable or rather paper insulated cable. Number 14 shows a cable splicer in the act of splicing the wires, the paper insulated wires.

We have a specification Number 3912, which goes into considerable detail on how to properly splice these cables. It is very important in splicing these cables that they be properly connected where they are so many wires in one sheath, that they be properly handled so as not to have any deteriorating effect on the cable and upon final con- [fol. 8709] nection or splicing the wires, to seal the entire joint or splice as we call it in a water proof or air tight splice; in other words, called a plumbers' joint. I have a picture later on referred to as a complete splice.

Q. Do you know the size of the cable shown there?

A. Yes, sir, that is 400 pair 22 gauge cable.

Q. And the job is therefore three times as complicated in the case of 1200 pair?

A. Yes, sir. Number 15 shows detail of that work in aerial cable, that is splicing of a strand. The development of that item of material marked C, that is, the strand connection made it possible to splice strands carrying tremendous loads. Before that the wire itself would cause a short bend, and it would break the strand. It was necessary to make the splice formerly around the pole. But with the introduction of this item strand can be connected at any point, saving both labor and time and expense.

Q. Was that developed by the American Company?

A. Number 20 shows the materials commonly used in underground conduit construction. That is listed in the material catalogue, entered as an exhibit. 21 shows what we call block cable construction. That is covered in specification Number 3931. This also shows block cable wiring. The wires you see at the cable are the wires that connect the cable with the various telephones, the terminal being

the junction of the wire with the cable. That is listed in Number 3932.

[fol. 8710] 24 shows a drop wire or a wire connecting a subscribers' telephone to a pole line. It shows the entrance of the wire into a residence. This is covered in specification Number 3930, method of doing that portion of the work.

25 is another photograph of a drop wire joint.

26 shows some of the materials used in specification work.

Q. Is that material all developed by the American Company?

A. Yes, sir.

Q. The design for it?

A. When you say "all" I will say at least most of it, and I know of none that is not developed by them.

Number 28 shows another mechanical or cable splicer, splicing a cable in a manhole. In large cities such as Columbus, Toledo, Cleveland and others, we have a great deal of underground work. It is necessary to build a vault at what is known as a manhole along the streets. This shows the splicing of a 900 pair cable, and the operation is similar to that on aerial, but more complicated, because of the greater number of wires. This is also covered in specification Number 3912, the method of splicing.

Now the manhole which is shown in this photograph, the construction of that is shown in the specification on underground construction 3613. It will be interesting to refer back to photograph Number 27, and there you will see a completed splice in a manhole. That is, after the splice is [fol. 8711] made and the plumbers' joint wiped. This manhole can be filled with water and that cable should not develop any trouble if work is properly done in accordance with the specifications for splicing.

That also shows a method of supporting cables in the manholes, so as to prolong their life, and the formation of cables, item F there, is a cable stub. That is interesting, since the branches which connect with the splice—sometimes there are a great many in one manhole, and it is desirable to do that work not in the main splice but at the end of this stub which is shown at the top of this. Now the development of that stub is also an item which the A. T. & T. Company has developed. Formerly all of the

branches would go into the main splice and everytime you wanted to get a new cable, you would have to blow the joint, as they call it, and the effects of opening that main splice more than once or twice are rather harmful. This not only saves expenses, but it helps the life of the cable.

Q. That is, the stub splice does?

A. The use of the stub. Specification Number 4032 illustrates the method of placing underground cables which might apply to this photograph.

Photograph 29 is interesting. It shows a toll line. I want to call your attention to the brackets that appear on each side of the pole, about half way between the pole and the end of the arm. Those are phantom brackets, and what made phantoming possible was the proper bal- [fol. 8712] ance of the wires in order to quiet the wires from any inductive disturbances. Now there on this pole I can see at least eight phantoms there or a possible ten. It means if the phantoms had not been developed, it would have been necessary to add two more of those cross arms or bars in order to supply the space for the additional wires, if wires had to replace the phantoms. In other words, if phantoms had not been developed there would have had to have been a taller and a heavier pole, to get the capacity of the line.

Q. What company developed the phantom circuits?

A. The A. T. & T. Mr. Rhodes described that particularly. This open wire construction outside of this phantom feature is shown in specification Number 3928.

I have just one more that I think might be of interest. Number 31 shows the application of loading coils to a toll cable. Loading coils are also used on trunk cables, but in those cases they are mostly underground, and to get a good picture of a loading coil I had to take this picture of a toll cable in the vicinity of Cleveland.

The next picture is of more interest. It shows toll cable between Cleveland and Akron. It is a cable that has 56 quads in it besides 138 physical pairs.

In the first place if a quadded cable had not been devised, in order to get the same capacity a second cable would have been necessary, and for this distance of about 35 miles between terminal points, between Akron and Cleveland—This cable cost about $500,000.00—an addi- [fol. 8713] tional cable would have cost probably at least

half that. That is the feature of quadding. The feature of loading would not have made it possible to use a cable between Akron and Cleveland.

Q. You say the feature of loading would not have made it possible?

A. No. In order to get these circuits, it would have been necessary to have applied—to have taken care of that capacity by means of open wire, copper wire. To have built a pole line carrying that number of pairs, just the physical pairs only, would have required a pole of the height to take 23 arms, and the lowest about 18 feet from the ground. You can imagine about what kind of a pole that would be. Something like the one Mr. Rhodes showed us as an obsolete pole in New York. Such a pole would be entirely impracticable between Cleveland and Akron or any other place in Ohio on account of storms and so forth, and I doubt whether we could get the material for poles of that height. Furthermore, the other wires that we had to cross over and under would have made such a height of line entirely impracticable. Now to build a practicable line carrying this same capacity would have required three pole lines of 10 arms each.

On photograph Number 30 you see a pole line of six arms. That is a very heavy pole line. With ten arms you would have four more arms, and that we consider the maximum practical height pole size line to build for open wire. Now we would have had to have built two more such lines to provide for these circuits and reasonable growth. Only one line would be built on a highway. The other side is usually [fol. 8714] reserved for electric light companies.

Q. When was this line built?

A. This cable was placed about six years ago.

Q. Yes, that is the Cleveland-Akron cable?

A. Yes, sir. We would have to either use three pole lines or buy a strip of right of way 30 to 50 feet wide in order to build this open wire feed to give us facilities of that kind.

Mr. Gentsch: Have you bought any rights of way of that kind?

The Witness: No, sir.

Mr. Burr: They adopted the suggestions of the American Company instead.

Mr. Dotson: Is this method you have just described here in photograph 32 the usual standard method loading the aerial of the company?

The Witness: Yes, sir, we have instructions in various forms. In this particular case it is not covered by a particular specification, but this transmission equivalent bulletin which I put in as an exhibit goes into this rather in detail and shows the application of loading coils to toll cables as well as other telephone plants.

Q. You say this is in the vicinity of Cleveland?

A. Yes, this is from Cleveland to Akron.

Mr. Snook: Is it your usual practice to put it above or below ground?

The Witness: Years ago we used to place these coils, [fol. 8715] these pots containing the coils, underground, but we have found there are many locations where the sightliness is not an important factor. This happened to be near the garbage disposal plant just south of Cleveland and we get satisfactory construction by placing these in the air. They are more accessible in case of difficulties and we save the cost of the manhole besides the additional cable required to go into the manhole and back, since this is a high-grade cable and all the surplus material we can save in that helps our transmission.

Q. I believe you mentioned in your testimony that you are in constant touch with the general staff with the American Company on any questions that arise in your work. I think you also mention that you have taken up many matters through correspondence and telephone conversations and so forth. Now since about the year 1921, for example, down to the present time, how many letters have you received from the American Company in connection with the work of your department?

A. I have 1720 letters that we have received from them in response to requests, *or* a few of these letters were of course general letters. 86 per cent. of these were in connection with specific problems in response to our requests and only 13½ per cent. about were general letters of the character that applied not only to Bell, but also to other companies.

Q. When you speak of the letters received from them to whom do you refer?

A. The A. T. and T. Company.

Q. What part of the A. T. and T. Company?

[fol. 8716] A. All departments.

Q. You mean departments of the General Staff?

A. Yes, sir.

Q. Have you a list showing the letters received and also telephone conversations on these various matters during the period covered by your previous answer?

A. Yes, it was rather difficult to get a complete list of telephone conversations, but I found 235 in the last two or three years.

Mr. Burr: The partial statement may be marked Kositzky Exhibit Number 26 and is offered in evidence.

And thereupon the list above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted marked Kositzky Exhibit Number 26 and made a part hereof.

Commissioner Maullar: This correspondence covers what period?

The Witness: Since the formation of the Ohio Bell, about October, 1920. There were two Ohio Bells. The Cleveland Company changed its name to Ohio Bell in 1920, and then the present corporation was formed in 1921. This dates back to the latter part of 1920.

Mr. Dotson: Do you know how many of these communications related to local problems in Cleveland.

The Witness: In Cleveland?

[fol. 8717] Mr. Dotson: Yes.

The Witness: Oh, I can't answer that.

Mr. Dotson: Quite a number.

The Witness: Oh, yes, most of these are local problems in various cities in the state, not necessarily Cleveland, but Toledo, Columbus and other cities and I think also toll problems.

Mr. Dotson: What you call relating to the local problems, you mean that the communications themselves bear on the face of them the particular locality to which they refer?

The Witness: I will be very glad to give you an example I have in mind now of Toledo.

Mr. Dotson: Yes.

The Witness: About two years ago, the question came up of the enlargement of our Toledo Dorr Street office. We

made a study. My department made a study. We had a number of questions in connection with that which seemed to us that we had to choose between, and in this particular case I got in touch with the proper party in New York, and they not only wrote us, but sent a representative to Cleveland, and we went over this Toledo problem and decided to extend our building, which has since been completed by Bentley and Sons, and we have installed equipment in that building.

I might state that the Ohio State has also a building on that street. The question was, shall we continue both? Shall we replace one or the other? Or shall we build a new [fol. 8718] one? It was a difficult one. We decided after a conference to add to the building, as we have done since.

Mr. Dotson: That is one of the branch exchanges.

The Witness: Yes. Another one I had recently—This is a telephone conversation—in connection with the purchase of that new piece of property just south, I think it is, or west of the present Ohio State building in the Spitzer Building. We could not very well write a question of real estate; it is a rather delicate question which you must handle verbally. I got in touch with the proper people in New York and they sanctioned or agreed to our proposition of purchasing that particular piece of property.

Mr. Dotson: These proposed alterations of branch exchanges you spoke of in Toledo, you consulted with the A. T. and T. Company primarily because it is the owner of the Ohio Bell, interested as such in the changes and alterations and improvements made in Toledo as well as elsewhere.

The Witness: No, not necessarily, Mr. Dotson. That is just one point that I wanted to bring out, that we do not always agree with their suggestions. Whether we are right or wrong remains to be seen. But they have had so much more experience in the building of central office buildings, particularly main offices as in this case at Toledo, or I hope it will be soon, that we felt it safer to ask them if a lot 150 feet wide by 120 feet deep, which is peculiar to Toledo, [fol. 8719] where it is hard to find property deeper than that—but we had a real problem there with which we felt much safer with their advice.

Mr. Dotson: My question is directed to the case you describe of consulting the A. T. and T. Company about the

question whether to build an addition to one of the branch exchanges or whether to build a new one I believe if I understood you and dispense with the two existing ones.

The Witness: We had three problems. We could continue the two buildings and postpone for a time the addition to one of the buildings or——

Mr. Dotson: That arose since you purchased the Ohio State.

The Witness: Yes, sir.

Mr. Dotson: You are dispensing with one of those branch exchanges then?

The Witness: That is right, yes, sir.

Mr. Dotson: That is out on Fernwood Avenue?

The Witness: Near Door street.

Q. Could you give some specific examples of the questions which were referred to in the correspondence referred to in Exhibit 26?

A. I have a few I thought might be of interest. There is one pertaining to Columbus. On April 22nd of 1922 the A. T. and T. replied to our request as to the arrangement of the Columbus Commercial office. Prior to that date we had our commercial office at 33 North Third Street, which was the old Bell Building, but with the acquisition of and [fol. 8720] consolidation with the Ohio State, we had to enlarge our quarters. The A. T. and T. Company specialists, who have studied commercial offices, in large cities, advised us, worked with us, and we have adopted here in Columbus what they call the unit type system of commercial office, and I think that any of you gentlemen that have seen that office will say it is a very handsome office, not only handsome but convenient and practicable and has great improvements over the old arrangement we had at 33 North Third.

Q. Are there any others that you can mention?

A. Yes, there are a few others. We have had considerable correspondence with New York and also they have sent representatives to Ohio from time to time in connection with population estimates. I think this is of interest. I am sorry I did not have some copies of Bulletin Number 47, in which they have made a study of the population not only of the United States, but the States in the United States. We have some figures that might be of interest, Mr. Burr. They estimate in this circular that the United States will

have a population in 1930 of 119,200,000 people, in 1940, 134,000,000 people. In 1950, 150,000,000 people.

Now they have also made a forecast in this bulletin of the population of the various states, and I might give you Ohio, as that is of interest. In 1930, a population of 6,722,000; in 1940 7,762,000; in 1950, 8,860,000. This shows a consistent gain of about 1.6 per cent a year, or 16 per cent per each [fol. 8721] ten years, and that is considerably more than what they estimate for the population of the United States.

My curiosity was a little aroused and I went through all of these and found that there are only four states in this union which have a growth exceeding Ohio. Two of them are just a trifle more, and New Jersey and California have a growth of a little over two per cent per year or 25 per cent per ten years. Arizona and Michigan will show just a little more than Ohio. In all the other states the annual growth is less than Ohio. I can get copies of this if it is of interest. I only have one copy. That is really important facts.

Now the population forecasts of the cities in Ohio are made very largely by the Ohio Bell, but they are supervised by the A. T. and T. Company. On the first one or two made they spent a great deal of time; in fact they sent their representatives to Ohio and spent a great deal of time in Ohio.

Q. What is the purpose of these forecasts and what reference have they to the telephone business?

A. In order to build our telephone plant we look toward the future. When we locate a central office we must know that that location is not only right to-day, but will be right in the future, as an office cannot be very easily moved.

Q. What do you mean by that?

A. So far as the wire center is concerned, it will be about [fol. 8722] the center of distribution in the locality which that office will serve. The conduits built underground for a long period of years in advance must also be designed for a certain number of cables, and that can be converted to terms of telephone stations. We know how many stations a pair of cable and about how many pairs per cable. So that the permanent construction must be built along some permanent line.

To start that work it is first necessary to make a population estimate not only by cities but by localities within the city. Upon that we make a commercial survey, which will tell us the number of telephones in the future by classes,

party lines and direct lines, business and residence, extension stations and so forth for these various locations. With that information we can then proceed to design our ultimate office, locate it first, design it, with the proper number of ducts underground, design the trunks to connect these future offices, and so forth, so that when any work is done we have an ultimate picture toward which to build. We made such a survey and population estimate for Columbus, and one letter which we received was November 20th, 1922, in which they commented upon our study on a population estimate made for Columbus. If it would be of any interest, I can tell you what this population estimate was. It showed that for 1940 Columbus would have a population within the present city limits of 304,554, and in the area which we call Columbus Exchange a little over 400,000.

Mr. Dotson: When is that? 1940?

[fol. 8723] The Witness: Yes, that is the period for which the study was made. We have intermediate points also.

Mr. Dotson: Who made that study?

The Witness: That was made primarily by the Ohio Bell. We furnished the clerical help, but the A. T. and T. Company have had their specialists in on these studies and were in touch with them while they were being made. I will give you some figures later of the number of times they sent people to Ohio on these various studies if you care to have them.

On March 7th, 1923, they wrote us in connection with the centralization of directory compilation. I thought that might be of interest since prior to this date our directory compilation work was done in the various exchanges throughout the State. They have experts who have studies not only the method of preparation of directory, but the methods of keeping the directories up-to-date and so on. Following their advice, we centralized this work and we saved $20,000.00 a year in Ohio on that one little item alone. In 1923, April 3rd, they wrote us in connection with the Cleveland Commercial Survey. We also made a population estimate and commercial survey of Cleveland.

Mr. McConnaughey: Mr. Kositzky, who was the fellow that devised the type in these directories? I would like to get a hold of him.

The Witness: I would be glad to have you see him, because we get a great many favorable comments on our direc-

[fol. 8724] tories, and I have some samples here of the old and new.

Mr. McConnaughey: It is the only type I can't read.

The Witness: On the Cleveland Commercial survey it showed that in 1940 we would have a population within the city limits of Cleveland of 1,068,360, or in the exchange area of Cleveland a little over 1,600,000. We received a great many other letters. On November 9th, 1923, in connection with the method of compiling directories again. January 11th, 1924, handling discounted accounts where the balances were due. Those are mostly commercial. I have a few here on plant engineering. For instance on October 8, 1921 they wrote us in connection with the addition to central office equipment at Alliance and Washington Court House.

Mr. Dotson: I am interested to know to what extent you have slandered Toledo on the question of population.

A. We made a study of Toledo. This was made in 1920. Our engineers, in conjunction with the A. T. and T., estimated that Toledo within the city limits will have a population of 311,000 and the exchange, which takes in the territory which is adjacent, 450,000 in 1940.

On January 12, 1922, we received a letter from the A. T. and T. Company in response to our request on the question of stubbing of cables. I showed that picture which indicates the application of the stubbing principle. And on this particular date, they advised us in connection with the stubbing of these particular cables.

[fol. 8725] On March 28, 1922 they also replied, in response to our request in connection with a suitable truck body to use on telephone trucks. We had a number of questions in connection with railroad P. B. X's. Alliance was one. When we changed from manual to automatic the question of giving service to the Pennsylvania companies P. B. X. was one that was difficult. We wrote the A. T. and T. Company and they advised us how to handle and connect that switchboard without replacing it to the new Alliance Exchange. Then we wrote them and received a reply on October 11th, 1922, in connection with air compressor and compressed air tools. In changing from manual to machine switching we had quite a problem in connection with converting the P. B. X. switchboards to work with this new type of equipment. The Pennsylvania was one specific problem.

We had problems of a minor nature in connection with

every other point. It either meant modifying the boards or installing new ones. They gave us considerable assistance by which we could continue the boards with slight modifications to work under the new conditions. That would apply to such a board as the Pennsylvania board at Alliance, which is just one example. The Union Trust recently installed quite an elaborate private branch exchange of the automatic type, and that was a rather unusual installation, and we wrote them and they replied on January 13th, 1923, giving us suggestions on that.

The A. T. and T. have done a great deal of work on labor [fol. 8726] saving devices, which Mr. Rhodes testified to, and we have been adopting those wherever we thought we could justify them in connection with our work.

The new boring machine, and pole derrick was the one that seemed to offer quite a saving to the company. So we wrote them. They replied to our letter as to the application of that in Ohio, and we have since purchased such a tool and are now using it. I have some photographs here which show this particular labor saving device. The first figure shows the machine and the four men necessary to operate. In the rear there you will see the augur mounted just in the rear of the rear wheels, and the upright immediately above the augur not only holds the machine to raise and lower the augur, in other words, forces it down, but is also used as a derrick in hoisting the pole.

Mr. Burr: The two photographs showing the boring machine may be marked Kositzky's Exhibit Number 27 and it is offered in evidence.

And thereupon the photographs above referred were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and are herewith submitted, marked Kositzky's Exhibit Number 27 and made a part hereof.

The Witness: The second photographs shows this gang actually at work. The second photograph shows the truck [fol. 8727] just after having bored the hole, which only took a few minutes, and is lowering the pole into the hole. The work that this truck and these four men will do under the old method required 30 men and one truck. These four men now do the same work, or a saving of 26 men a day, and if it is country work, besides their board and lodging expense.

This machine was developed by the A. T. and T. Company.

Mr. Dotson: Does that also effect a saving, a corresponding saving in cost of placing poles?

The Witness: Oh, yes, they are able to erect poles at less cost now than under the method of handling labor at the current prices.

Mr. Shuler: Mr. Kositzky in your method of arriving at reproduction new, do you figure the construction of the pole lines by the use of this machine?

The Witness: We take into consideration all factors as I would——

Mr. Shuler: No, answer my question.

The Witness: If we are going to reproduce Cleveland——

Mr. Shuler: No, have you done it in your reproduction new.

The Witness: We haven't any units yet, but I will just tell you how we will prepare them if that will be responsive to your question.

Mr. Shuler: No, it would not. No, I wanted the fact whether in this toll line case, in the construction new of that plant, you have arrived at your cost by using the old 30 men and the truck or the use of the machine.

[fol. 8728] The Witness: 30 men and a truck, because that is the way the present plant is built, and this will only apply to future construction.

Mr. Snook: Mr. Kositzky, just for the purpose of my own information, and it need not go in the record, would you retamp the dirt, how is that done?

Commissioner Poor: It probably better be in the record.

The Witness: There is a gang of 6 men who follow the job.

Mr. Snook: They line up the pole and tamp the dirt.

The Witness: Yes, under the old method and the new method.

Mr. Snook: Do you know what the difference in cost of construction is between the old method and the new.

The Witness: We have not had the experience, having only had a few months; we hope to know how much we will be able to save per pole for every hole dug.

Mr. Shuler: You know it saves the labor and boare of 26 men per day.

The Witness: Yes, sir, or the 75 poles that it will set per day. On October 18th, 1923, the A. T. & T. wrote us in

connection with our fundamental plan which we have recently completed for Cleveland. On December 11th, 1923, they wrote us in connection with the problems we encountered in Youngstown in connection with the installation [fol. 8729] of the new equipment just completed. Mr. Anthony covered the traffic questions and I will pass them over.

Q. You said something about the advantage obtained through the telephone conversations you had with the staff of the American Company in New York. Can you give us an example of some of the questions concerning which you have found it necessary to consult with the General Staff by long distance.

A. I can only give my own experience, Mr. Burr.

Mr. Dotson: Now this is to relate conversations by telephone.

Mr. Burr: No, he is just giving examples of instances wherein he was required or found it desirable to take up matters with the General Staff by telephone rather than by correspondence.

The Witness: I mentioned one case and that was the Toledo lot which we purchased, which we could not very well write, and I have one or two others in my own experience that might be of interest. In 1922, early in 1922, when we had this problem of unification, unification work, in Ohio, we realized it was a tremendous job, and I got in touch with Mr. Charles Wolfe, plant engineer, for the General Staff of the A. T. & T. Company in New York about the loan of some people either from his own organization, if they were available, or to obtain men for me from other companies. As the result of this conversation I got a man about as quickly as the man could conveniently arrange to come to Cleveland, and he assisted me in some equipment engineering work. This man's name [fol. 8730] was Wright.

Mr. Dotson: What was the conversation you had concerning the Toledo lot?

The Witness: Merely this, that we had a piece of property—there was a piece of property in Toledo of a certain size and an approximate location—he had a map of Toledo —that we thought favorably of purchasing in connection

with our future home as a main office in Toledo. We asked him—I cannot remember the details, but this is in general—as to whether or not he felt that an interior lot of these dimensions would give us a building of suitable depth and width and also with suitable light and air to house equipment. It was not considered at this time for offices, because you can put offices in any building and have them satisfactory. But in connection with equipment, the building must be designed particularly for the equipment, not only for arrangements so as to have an economical arrangement in a certain space but to provide for the expansion and growth in the future.

Mr. Dotson: Prior to that conversation though you had worked out a fundamental plan for Toledo, including such a building as you contemplate.

The Witness: The fundamental plan is only for the purpose of locating a center which would be suitable. That center was very close to the place where we purchased this property, but the fundamental plan does not design the building. It merely gives us the location and the number of stations that will have to be accommodated at that [fol. 8731] point at some period hence.

Mr. Dotson: You had assured yourself, you were satisfied in your own mind, that the location you had under consideration was a suitable one before you communicated with them.

The Witness: I was satisfied that the location was as good as could be had. It was merely a question to see what his idea was and whether or not the shape and size were satisfactory.

Q. State some other recent cases?

A. One interesting one that happened recently in Ohio was where the local light company changed its method of distribution from the three wire three phase to a four wire distribution, and it caused us some trouble. It was entirely new to us, I knew nothing about the advancement in electric light distribution, so I called up the General Staff and they sent a man to Ohio, not only to Cleveland but to this particular locality where we experienced this trouble, and worked with the light company, and they solved our difficulties, and so far as I know the light companies are following—at least there was a solution worked out between the two which solved our problem.

Q. I think you have already referred to the assistance given you by the General Staff in connection with the electrification of the Detroit, Toledo and Ironton Railroad. Is there anything else that you have to say on that particular subject, or did you cover it in full?

A. No, nothing only we have Order 65, now 72, of the [fol. 8732] Commission which quite generally covers the standards to be employed in the electrification of a railroad. Yet we have a great deal of property involved, not only toll property, but exchange property, which will be seriously affected by the introduction of high tension circuits along the railroads in connection with the electrification work.

Q. Are these the only matters of this kind that you could cite?

A. Oh, no, there are many others. These are just some that I jotted down as being probably interesting examples.

Q. In one or two parts of your testimony you have referred to special services rendered. Do you refer to services in addition to correspondence and telephone conversations?

A. Yes. The other list of services is really one that is of considerable interest, in that it cannot be handled very conveniently through correspondence or telephone conversations, services where they come out and actually assist or confer with us, or we go to New York and get information there. We have had quite a number of instances of special service of this character that we have received in the past few years, at least since the formation of the Ohio Bell. I have a list of 577 instances.

Q. Of what?

A. Of such services, where either the A. T. & T. people sent people to Ohio or we sent people to New York, mostly the former.

Q. All but two and one half per cent of these cases were specific services in response to our request. The other two and a half were more or less of a general nature which [fol. 8733] was given to all associated companies.

Mr. Burr: The list may be marked Kositzky Exhibit Number 28 and is offered in evidence.

And thereupon the list above referred to was marked for the purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone

Company and is herewith submitted marked Kositzky Exhibit Number 28 and made a part hereof.

Q. Just state in your own way if you please a few typical cases of those services?

A. I did mention the unification work. They have sent people to Ohio from time to time. At one time alone they had five men and spent a week here. These five men were experts in the five different lines. They visited the various cities in Ohio and they discussed with us on the job our program or plan that we had for unifying of the services at those various points.

Q. Was there any special circuit work at any of the points?

A. Yes, that was another service I would like to mention. In the larger cities such as Cleveland, Toledo, Columbus, Youngstown, Akron and others a large amount of special circuit design and development work was necessary to unify the boards, in other words, to make it possible to transfer calls from one switchboard of one make to switchboards of another make. In Cleveland alone 90 special circuits were developed, telephone circuits, *telephone cir-* [fol. 8734] *cuits*, and 16 power circuits; Toledo 60 telephone circuits and 12 power circuits.

Q. What do you mean by circuits?

A. A circuit is a grouping of apparatus and wire in order to perform a certain function required in connection with the telephone conversation. There are thousands of circuits in a switchboard.

Q. You mean thousands of different kinds?

A. Yes, sir. In Barberton, which seemed rather a simple case, yet in order to make the switchboard, which is of a make other than Western Electric, work with the switchboard at Akron, it was necessary there to design 23 special circuits; about the same number in Cuyahoga Falls to make that work with Akron. There are a number of others, Springfield, Columbus and Dayton.

Mr. Gentsch: Do you mean to infer from your testimony here without the help of the Ohio Bell you did not have competent men to do this work.

Mr. Dotson: Without the help of the A. T. & T.

Mr. Gentsch: Without the A. T. & T.

The Witness: No, I do not, but I do mean this, that in order to have developed these circuits it would have been

necessary to have employed additional help. It would have taken considerably more time and probably have cost us considerably more to do the experimental work necessary, which these men from their experience could direct us to almost without any false motion.

Mr. Gentsch: Aren't a lot of you men doing that work [fol. 8735] constantly who are familiar with that.

The Witness: I have circuit men that work on smaller jobs, and where once this man has had instructions as to how to handle a particular problem, all such problems are then handled by this particular man.

Mr. Gentsch: Aren't these problems all of them more or less a repetition of the others?

The Witness: Each of these is a different problem.

Mr. Gentsch: All varying in detail, but along the general line——

The Witness: They are all different problems.

Mr. Gentsch: You mean that, notwithstanding all the work, that your organization has done you haven't anybody competent to do it without the help of the A. T. & T.

The Witness: I think I answered that.

Mr. Gentsch: Is that what you mean?

The Witness: I think I answered that.

Mr. Gentsch: Just answer that yes or no.

The Witness: Not entirely.

Mr. Gentsch: All right.

The Witness: Now they spent on these few jobs 49 man days, or one man 49 days, or 7 men 7 days whichever way you want to take it. Now when the commercial survey was made in Cleveland, which was a rather special problem on account of its size, they had three men in Cleveland, who spent altogether 1118 man days or the equivalent of one man nearly four years. Now these men worked with our [fol. 8736] people. There were a great many men involved in this study.

Q. Did you speak about the instance in June 1922, when a number of American Company experts from New York visited Toledo, Cleveland, Columbus, Dayton and Akron?

A. I believe I mentioned where five men, specialists, spent a week in Ohio.

Q. Yes?

A. We made a commercial survey also of Columbus, and altogether they helped us to the extent of over 3,000 man

days in the commercial surveys made in Cleveland, Columbus, Akron, Toledo and Youngstown.

Mr. McConnaughey: Now that job is done for 20 years isn't it?

The Witness: No, these are checked from time to time as conditions change. Every five years or thereabouts. In Cleveland we just finished one. The one before that was in 1916. The one before that I think was about 1910 or '11, depending on the growth of course. A city that has a remarkable growth, it is necessary to check it up oftener, and one that is stationary we do not check up so often. They are about to make one in Dayton for your information.

Q. Briefly of what do the commercial surveys consist?

A. I thought I covered that. Mr. Rhodes covered it.

Q. Yes, he did. I don't know that it is necessary to go into that again.

A. After a commercial survey is made, a fundamental plan is made which I briefly described, and A. T. and T. have specialists who do nothing but that. We have made [fol. 8737] such fundamental plans of these cities mentioned, and they have sent men to Ohio. I have found altogether spent 137 man days in fundamental plan work, that is, in addition to the commercial survey.

Mr. Gentsch: Did any of those men spend any time on the improvement of the service.

The Witness: Not these fundamental plan men.

Mr. Gentsch: I mean any of these experts.

The Witness: Yes, sir, we have service experts whom we consult. I would like to mention Mr. Harrison who is an equipment maintenance specialist, what we call a bug shooter.

Mr. Gentsch: Why is the service as bad as it is in Cleveland?

Mr. Burr: I object, that is not a fair question.

Mr. Gentsch: He knows what it is and you do not.

Mr. Burr: I do not know that the service in Cleveland is bad.

Mr. Gentsch: You are the only man in Cleveland that does not know it.

Mr. Dotson: He is not in Cleveland.

The Witness: I thought the service was good in Cleveland.

Mr. Gentsch: I pity your judgment then.

Mr. Miller: Has any of the General Staff been to Canton?

The Witness: Yes.

[fol. 8738] Mr. Miller: I mean on improving the service.

The Witness: Mr. Farnum, a traffic engineer for the A. T. and T. Company was there about three months ago. Mr. Roberts, equipment engineer, and another gentleman whom I met, together with other Ohio Bell officials, spent a day and some two days in Canton.

Mr. Miller: They didn't accomplish much, did they?

The Witness: I don't know. Another study that was made was what we call loop and trunk study, the proper balance you might say between the balancing of the trunk conductors between various offices and the subscriber's loop, in order to design and arrange the most economical plant to give what we call standard transmission. Such studies have been made for Cleveland and all the larger cities in Ohio. The Cleveland one is interesting. That was about the first one. The A. T. and T. helped us considerably. In fact about 23 man days their experts spent in Cleveland on this particular study. It showed that by a little different assignment and arrangement of apparatus, substation apparatus, and the loading of trunk conductors and changing the details of some of the various offices we were able in the next five years to economize in plant construction to the extent of $500,000.00. I might say that most of this would apply to the Ohio State plant. The Ohio Bell had some kind of loop and trunk study work before. But this was merely to check up, to embody the newer de-[fol. 8739] vices or methods developed by the A. T. and T. Company. The Ohio State had no such assistance from A. T. and T. or such experience, and we found that their plant was designed and arranged very uneconomically. In many cases plants were improperly placed. The larger wires were used when not necessary, and too small conductors in other places.

Mr. Shuler: Were you familiar with the Ohio State in Cleveland at the time it was consolidated? Let me ask you this question. Was the fact that the Ohio State Company in Cleveland was uneconomically, wastefully and inefficiently equipped, considered by your company and so represented

to the Commission and effect given to that when a valuation was placed upon it for the purposes of consolidation.

The Witness: I do not believe that I could answer your question.

Mr. Shuler: Do you know who can? Do you know who, in your department, or the General Staff is familiar with it so that we can get it?

Mr. Burr: The record is the only place where you can find that. I was present at the hearing, but I have no recollection of that..

Mr. Shuler: You have no recollection?

Mr. Burr: No.

Mr. Shuler: You don't know whether that was considered or not?

Mr. Burr: I have no recollection on that subject at all. [fol. 8740] Mr. Shuler: You don't know whether it was represented as being 95 or 90 per cent efficient?

Mr. Burr: No, I do not.

Mr. Shuler: Do you, Mr. Schneider?

Mr. Schneider: No, I haven't any recollection now.

The Witness: The A. T. and T., if I may be permitted to continue, have experts who have studied the question of directories, the paper stock, cover stock, the arrangement of the listings, desirable type and so forth. These men have studied directories over the entire United States and have assisted us in our directory work. I have here some directories which might be of interest. Here is the old Ohio State directory issued in 1922 for Canton. This has 174 pages, and 8479 listings. The Bell directory about the same date, July 1922, has 190 pages, and 7,766 listings. The new directory for Canton, which is the consolidated directory, has 15,066 listings and only 113 pages, or less pages in this directory than in either one of the single directories, and I do not believe that comparing these directories there is any question but what the newer directory is not only easier to use, but easier to read. Now the savings in directories alone in 1922 over preceding years was $20,000.00. Here is the Xenia directories.

Mr. Shuler: Do you mean your books will show that you spent $20,000.00 less for directories?

The Witness: In the printing bill, yes, sir.

[fol. 8741] Mr. Dotson: Mr. Kositzky, those larger directories were used then more as advertising mediums than

that new one and those advertising revenues bore that expense?

The Witness: I did not include the advertising pages. I merely took the pages covering the listings.

Mr. Dotson: The portion for listings is greatly reduced by the marginal advertising, isn't that true?

The Witness: There may be something to that, although the new directory also has marginal advertising, and the revenue from advertising is even greater in the new book than in the old one.

Mr. Dotson: The other element that enters into the difference is the smaller type you are using now.

The Witness: The type is a little smaller, but it is a sort of bold face type which is easier to read. Before that type was adopted I saw some experimental work one time when I was in New York. They had various types, various sizes and they submitted them to a number of people, with the request as to which type was most easily read, and that is the way in which they arrived at the type that is now being used.

Mr. Gentsch: I know I can't read it. I use to read the old directory, but now I have to change my glasses.

[fol. 8742] Q. Now, referring a moment to the 1922 loop and trunk study for the City of Cleveland, what, if any, was the total saving over the five year period resulting from that?

A. I think I answered. I think that is in the record.

Q. I am not sure.

A. $500,000.00 would be the savings, the savings in the next five years in construction of plant.

Q. I think you did refer to that, but my attention was called elsewhere for the moment.

Mr. Gentsch: Has that been given any effect in your reproduction value?

The Witness: That is the same question as your pole question. The inventory must bear that out, and five years from now, while inventorying this property as then, if there is that much less property, then it will be that much less in dollars.

Mr. Gentsch: Do you expect to inventory again in five years? Is that your idea?

The Witness: I cannot answer that.

Mr. Gentsch: Is it reflected or in any way given effect in any figures you have given the Commission?

The Witness: No, those savings have not yet been realized.

Mr. Gentsch: But your rates that you are asking for are affecting the future when these savings will be in effect; that is true, isn't it?

The Witness: I have quite a list more of savings. It will [fol. 8743] probably be easier to answer it when I have all of them.

Mr. Gentsch: Yes.

The Witness: I cannot answer that question. That is a legal question.

Q. What are some more of the services of a similar character?

A. There are a number of others. The rearrangement of the Cleveland offices and the installation of busy test cabinets, joint use of poles in residential blocks, standardization of booths, revision of our routine, transmission complaint reports, estimate routines, routines for handling power cases and cooperation with power companies.

Q. Are these all matters as to which your company had the assistance and advice of the General Staff?

A. Yes, sir. I might mention, in connection with that, Administrative Order No. 72, on which we received help from Mr. Wilkinson, Keyes and others. These men spent a total of 201 days in the preparation of these rules in Ohio.

Q. That was done at the invitation of The Public Utilities Commission, wasn't it?

A. Yes, sir.

Q. All right. Go ahead. No, just a moment. Before you get off of that, who paid for the time of those men and the expense while they were working on that matter, do you know?

A. The A. T. & T. Company.

Q. Go ahead.

A. We had some difficulties here in Columbus which were heard before the Federal Judge and also this Commission in connection with the power over building on the Johnstown Pike between Columbus and Gahanna and other [fol. 8744] places. In connection with that controversy the A. T. & T., at our request, sent a number of employes, Mr. Wilkinson, Keyes, Norris, Moore and Sghirmer, to Ohio,

who altogether spent 52 days here in Columbus in connection with these various cases before this Commission and the Court.

Mr. Shuler: That is not an expense matter.

The Witness: It is a service we received in connection with this difficulty we had which we were not so fully equipped to handle.

Mr. Gentsch: Your situation after you got through was no different than when you started on that.

The Witness: We arrived at a solution.

Mr. Gentsch: Yes, but it was not the solution the A. T. & T. wanted, was it, or you wanted?

Mr. Burr: Oh, yes, it was.

The Witness: I don't know why not; we agreed to the solution. It was settled out of Court.

Mr. Gentsch: But isn't it a fact that the settlement was along the lines of the Power Company's contention and not your lines? You gave it to them and you had to concede they were right?

The Witness: No, sir.

Mr. Burr: Not at all.

The Witness: No, sir; the concessions I think were something on each side.

Q. Do you remember how much the Power Company paid your Company?

A. No, I do not.

Q. But it was something, wasn't it?

A. Oh, yes.

[fol. 8745] Commissioner Maullar: And the lines were to be separated in accordance——

Mr. Burr: In accordance with the suggestions of the Telephone Company made pursuant to Order No. 72.

The Witness: Another item of special service we received was in connection with machine switching or, automatic service in different cities. The A. T. & T. had experts and specialists who were thoroughly conversant and familiar with the engineering and design and operation of this apparatus. We sent people to New York and they also sent people here who gave our employes instructions in connection with the engineering of this equipment. This is commercial information, traffic instructions and equipment instructions, altogether about 535 man days, if I may use that

expression, consumed by the men from New York in connection with this educational work.

Q. That is time spent in Ohio and in New York?

A. Yes, sir.

Q. Time spent in Ohio by the representatives of the General Staff of the American Company, and in New York by representatives of your Company?

A. Yes, sir. Throughout Ohio the electric light companies are engaged in building super-power lines, electric light lines of very high voltage. In order that we may be thoroughly familiar with the effects of this current in the vicinity of our lines and to know the remedial measures to apply, the New York organization conducted schools to which we sent employes to familiarize themselves with the technical details of this work.

[fol. 8746] To one school we sent three men to New York for three months, two sessions of three months each. Another school on inductive interference we sent seven men, or rather eight men, eight months each, or a total of 750 man days spent in New York by our people in connection with this educational work.

Mr. Dotson: At whose expense were they entertained there?

The Witness: Our employes in going to New York pay their own expenses and the A. T. & T. coming to Ohio pay their own expenses.

Mr. Dotson: Then in what way are we to understand that the A. T. & T. rendered service here for the Ohio Bell if the time of that service was paid for by those men?

The Witness: It is the educational service we received from their specialists in educating our employes.

Q. None of the services were paid for?

A. It is just merely the traveling expenses I refer to in answer to your question.

Q. Did you say anything about the transmission school?

A. Yes, sir, that was included in the inductive interference.

Mr. Dotson: When did this take place? When were these men down there?

The Witness: The last school, the last session, was about September and October of last year. The first session was in the spring. The transmission school was the year before [fol. 8747] that, or two years, somewhere along there. It

is all in the last three or four years. The A. T. & T. on various occasions have sent men to Ohio in order not only to take up matters directly with the specialists but also others who are interested in questions such as transmission—that is, not only the transmission engineering, but those that have to do with the maintenance of plant wherein transmission is an important factor. On several occasions they have sent men—one time five men—that held conferences with those supervisors in our organization and the conferences lasted several days, altogether about 30 days spent by the New York men in Ohio on those conferences. There are also other conferences we have right along. For instance, I attended one in May, '23, in connection with other chief engineers throughout the country, in which problems, current problems, were discussed, questions answered and the improvements and developments right up to the minute were given us.

Q. Now in the typical cases which you have pointed out what are the total results of the time spent in New York by men of your Company and by American Company's General Staff men in Ohio?

A. I haven't a list of all, but I endeavored to summarize a few I have mentioned.

I believe I left out one or two, but I had a list of something like 3586 man days in Ohio and 1344 man days in New York. That is only a partial list and does not mean much.

Q. You mentioned at various times the question of improv- [fol. 8748] ing transmission by means of loading coils, repeaters, etc. Can you tell the Commission what effect the addition of these improvements has had on the distance over which telephone users have been able to talk from time to time?

A. Yes, sir. Prior to the introduction of loading it was possible to talk only about 450 miles; that is, from Ohio you could talk to Chicago; to just a little beyond St. Louis, and, say, to Washington, New York and Buffalo; but the range of long distance conversation was rather limited. With the introduction of loading it is possible to extend the range of transmission to about 1200 miles; say a radius from Ohio covering points like Minneapolis, west to Omaha and Oklahoma City, below Atlanta and Montgomery to the South, as far east as Boston.

Q. Who evolved the system of loading to which you refer?

A. These were the coils Mr. Rhodes described as having

been designed, or rather patents controlled by the A. T. & T. Company. With the introduction of the repeater which came about in 1915——

Q. Who designed the repeater?

A. The A. T. & T. Company.

Q. Go ahead.

A. That made it possible to talk any place in the United States, to Cuba and even to points beyond the United States, such as into Canada, Mexico and so on.

I have a map here that shows rather interesting information that might be introduced showing the range of transmission.

[fol. 8749] We have a submarine cable from Havana to Key West, the longest of its kind in the world, and another between Los Angeles and Catalina Islands. That replaced formerly a commercial wireless station. You will notice this line constructed to Havana, routed to Washington, Chicago, Denver, San Francisco, Los Angeles and the Catalina Islands, 5500 miles in length, the longest physical line over which commercial service is given, at one point a mile below sea level and at another point west of Denver a mile above sea level.

Mr. Burr: It may be marked Kositzky Exhibit No. 29, and is offered in evidence.

And thereupon the map above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Kositzky's Exhibit No. 29 and made part hereof.

Mr. Dotson: What, if you know, did Mr. DeForrest have to do with the origin of the repeater apparatus?

The Witness: Only that he invented the bulbs and some of the tubes which are now controlled and the patent rights are available to the Bell System.

Mr. Dotson: He was not identified with the Bell System at the time?

The Witness: No, sir. Neither was Dr. Pupin who invented the application of the loading coil that is now in the posses-[fol. 8750] sion of the American Telephone & Telegraph Company.

Q. Both of those inventions were made available to the

Bell System through the efforts and the money of The American Company?

A. Yes, sir, and the application of those principles was strictly an A. T. & T. achievement.

Mr. Shuler: The Ohio Bell, as far as its long distance lines are concerned, are of what length?

The Witness: The Ohio Bell——

Mr. Shuler: Not over 250 miles?

The Witness: You mean within the State? It is from one corner to the other.

Mr. Shuler: They don't own anything outside of the State?

The Witness: I know, but the subscribers of the Ohio Bell are able to talk to any place in the United States.

Mr. Shuler: Now the repeaters and the loaders are most valuable to the long distance department of the A. T. & T.?

The Witness: No, the Ohio Bell has some, if I may answer it that way.

Mr. Dotson: Are those repeaters used by the Ohio Bell for their service within Ohio?

The Witness: Yes, sir.

Mr. Dotson: Is there any real need of that?

The Witness: Yes, sir; we have six repeaters; some here in Columbus; some at Akron.

[fol. 8751] Mr. Dotson: What makes the necessity for that?

The Witness: To talk from Middletown to Youngstown or from Dayton to the northeastern part of the State it is necessary for a repeater both at Columbus and at Akron through which these circuits are routed.

Mr. Shuler: Years ago, before your loader and repeater, I used to talk from Cincinnati to Cleveland and from Cincinnati to Ashtabula, didn't I?

The Witness: When was that?

Mr. Shuler: In 1904, '05 and '06?

The Witness: Yes, sir; that was this pink color; you talked over loaded circuits then.

Mr. Shuler: Just as you are talking now?

The Witness: Yes, sir; the loading was installed on open wire circuits in 1901.

Mr. Shuler: Oh, I thought this was later.

Mr. Burr: There is a distinct difference between loading and repeaters.

Mr. Shuler: Yes.

The Witness: The repeater makes you able to talk much further than the loading will.

And thereupon the further hearing of this matter was adjourned to ten o'clock Friday Morning, March 28th, 1924.

[fol. 8752] Friday Morning Session

March 28th, 1924.

And also G. A. Kositzky, resuming the stand for further direct-examination, continued his testimony as follows:

Examined by Mr. Burr:

Chairman Marshall: You may proceed.

Q. Mr. Kositzky, under whose supervision is the preparation of the program of plant extensions of The Ohio Bell Telephone Company, that is to say, the additions to plant, which will be needed from time to time, not only during the current year but in, let us say, for example, the next five years?

A. That is under my supervision.

Q. In preparation of the program, what, if any, estimate do you make and have you made for those additions to plant?

A. We prepare our estimate—I may first state that we make a very careful estimate of our station growth for the coming year, the amount of plant that is necessary to take care of that growth and the amount of expenditures necessary, the amount of money needed in order to take care of those expenditures. Now the expenditures necessary for the growth in the coming year 1924 are 11½ million dollars.

Q. Is that what you call a provisional estimate?

A. Yes, sir; sometimes called the budget or budget system.

[fol. 8753] Q. In addition to making a survey of the expected telephone growth what other elements have you taken into consideration in arriving at your provisional estimate for the year 1924?

A. The amount of money necessary to finance this program outside of the resources of the Ohio Bell.

Q. Tell the Commission whether such a provisional estimate is prepared each year?

A. Yes, sir, not only for the coming year but also for a period of five years hence.

Q. To what extent does that provisional estimate represent your judgment in the matter of the requirements of the Company for the next five years?

A. That is as accurately as we can estimate it and we think it is reasonably close; although our experience has shown that our requirements as we go along are a little greater than our estimates are of a year ago.

Mr. Shuler: May I ask the purpose of taking the time with this examination?

Mr. Burr: It bears upon the financial requirements of the Company and the financial services rendered to it by the contract.

Mr. Shuler: Oh, it comes in later? This is the foundation. I see.

Q. What have you estimated that your Company will spend for additions to plant in the year 1924?

A. $11,500,000.00.

Q. Is that what you call the requirements of your Company for the year?

A. Those are the gross requirements, yes, sir.

[fol. 8754] Q. And the amount is how much?

A. $11,500,000.00.

Q. What are your requirements for additions to plant in the next five years, starting with the year 1924 and ending with the year 1928?

A. $60,500,000.00.

Q. To what extent have you gone into the matter in order to arrive at that amount?

A. Well, as I explained, we make a very careful survey and estimate of the growth of telephone stations.

Q. You say you make or you made?

A. We make and have made for this period, and on the basis of that we compute our requirements of plant additions and then convert that into dollars.

Q. You spoke a moment ago about the results of your actual experience as compared to your provisional estimates; stating, I believe, that usually the actual experience in the matter of expenditures ran somewhat over the estimated amount. What was your experience in that respect with reference to the forecast of a year ago?

A. A year ago our five year estimate was $50,000,000.00, at the rate of $10,000,000.00 per year; that is, the year starting 1923; and our subsequent review, starting with the year 1924, indicated that our average per year would be a little over $12,000,000.00 a year, or $60,500,000.00.

Q. To what extent, if any, will the Ohio Bell Telephone Company require financial assistance in order to finance its 1924 construction program beyond the capacity or ability of its own resources?

Mr. Shuler: I object to the question. My objection is [fol. 8755] based on this, that all through the hearing they used any particular witness who happened to be present to prove any particular matter they wished to prove. What does this witness know what their financial ability is particularly to raise this particular fund itself? He is not in the financing end. He is an engineer.

Commissioner Poor: Well, he is supposed to be testifying from knowledge. If he don't know that, it can be made to appear on cross-examination.

Mr. Burr: It is his business to know these facts, Your Honor. He has already testified that it was necessary for him to make up the provisional estimates and he has made them up. The Commission say you may answer the question.

The Witness: Well, we will require for the year 1924 $3,882,000.00, outside of the resources of The Ohio Bell Company.

Q. From what source have you acquired a part of that amount, and from what source will you acquire the balance for the year 1924?

A. From the A. T. & T. Company.

Q. Do you know how much of that amount has already been furnished by the American Company for the year 1924?

A. Yes, sir.

Q. What is it?

A. 950,000 up——

Q. Dollars?

A. $950,000.00 up to Saturday, March 22nd.

Q. Do you know whether or not the American Company has agreed to furnish the balance of the amount during the year 1924?

A. Yes, sir, I do.

[fol. 8756] Q. Has it?

A. They have agreed, yes, sir.

Q. How much do you estimate The Ohio Bell Telephone Company will require beyond its own resources from the American Company for the years 1925, '26, '27 and '28?

Mr. Shuler: I object to the question.

The Witness: I should say in my estimation about——

Mr. Shuler: It can only be an estimated basis.

Mr. Burr: That is all it is.

Mr. Shuler: But then this year you have got it down apparently to a dead certainty because you are into this year. It seems to me we should not be bound by mere estimate which may change very materially. I cannot see the real materiality and significance of it, as far as it relates to the question we are discussing. I think the Company is permitted to go far enough when it is permitted to testify as to those matters for the year 1924. We might just as well have come in here with a laid out program for ten years and have adopted a ten year basis for study or discussion, or 20 years, and ask the privilege of prophesying to the extent of 20 years into the future.

Mr. Burr: It is certainly not unreasonable for the Company to estimate five years ahead in the matter of its plant additions and financial requirements. The experience of the Company has shown, as testified by the witness, that the requirements recently have run more than the estimates, so that when he gives his estimate it may be considered as a minimum requirement. It is certainly a perfectly competent matter for this witness to tell the Commission what are the [fol. 8757] financial requirements of this Company for the next five years, and I should think that the witness would be very much interested in it, as it goes to the amount which will be necessarily expended in the State of Ohio in the construction of additional plant to serve the people of this State, and it goes directly to the amount of financial assistance required by the Company under this contract, and the measure of the value of the financial assistance is one of the things which the Commission is seeking to ascertain in this case. It is not assistance for only one year; it is assistance for this year and a number of years in the future.

Commissioner Maullar: But the contract may be terminated by the American Company at any time they desire to.

Mr. Burr: No, it cannot.

Mr. Shuler: The license contract?

Mr. Burr: The license contract insures this right to the Ohio Bell Telephone Company in perpetuity unless the contract is terminated for the default of The Ohio Bell Telephone Company. I refer to Paragraph 14 of the contract, on page 18, wherein it says: "The rights of the licensee hereunder shall be perpetual unless sooner determined as herein provided, and the territory hereinabove referred to as the territory of the licensee is as follows, namely:"

Mr. Dotson: The termination of it is in the hands of the A. T. & T. Company.

[fol. 8758] Mr. Burr: For the default by The Ohio Bell Telephone Company in carrying out the terms of the contract on its part to be performed.

Mr. Dotson: They determine whether default has happened.

Mr. Laylin: On that point, Mr. Kositzky is undoubtedly an eminent engineer and as such is qualified to speak as an expert on engineering problems. However, in this particular instance—there has been no objection to his stating and projecting the requirements of expenditures, but as to the financial requirements it is contingent upon so many outside elements, such as the rates to be received by The Ohio Bell Telephone Company, and also economic conditions generally upon which he is not qualified to speak as an expert, and this is calling for an opinion as to what the financial requirements will be, and I submit that he is not qualified as an expert in that respect.

Mr. Burr: Mr. Kositzky's department is the one which has to spend the money.

Mr. Laylin: We are not objecting to spending the money. Of course it is a question as to financial requirements to which we object.

Mr. Shuler: I venture the assertion that this witness cannot tell the Commission of his own knowledge as a financier or a bond man approximately how much money the Ohio Bell Company can raise on its own resources today, next month or next year, and that is the reason I objected to the first question put. I do not believe Mr. Kositzky can hon-

[fol. 8759] estly testify on that point because he is not a bond salesman, nor is he acquainted with the financing of properties. I do not believe he is. If he is, why, that is different.

Mr. Burr: I am not asking him anything about the amount of money which his company will be obligated to borrow

from the American Company. The question does not ask for that kind of an answer at all. All I asked him was his estimate of the requirements of the Ohio Bell Company for additions for the next five years—the next four years, including 1925, '26, '27 and '28. If the question did include in it the amount which he will require from the American Company, it is none the less competent, because here is a contract which has been in effect for many years, and under it the American Company has been and is now assisting the Ohio Bell Company in its financing of its requirements.

The witness has a long period of experience upon which to base his judgment and there isn't any business in the world, especially that of a utility, wherein the chief engineer of a utility cannot fairly estimate the financial requirements of his company over a period of years in the future.

Mr. Shuler: I have not made any objection to any such question. My sole objection was to the former question, How much money will be required from the A. T. & T. beyond the resources of the Ohio Bell to itself finance? I objected to that question on the ground that Mr. Laylin stated and which I repeated awhile ago. My recollection may be [fol. 8760] faulty, but it is that your last question asked, to which I again objected, was, "What will be required from the A. T. & T. Company by the Ohio Bell Company to finance the next five years program beyond the resources of the Ohio Bell Company to furnish it itself"; and I objected to that question as I did to the others on the ground that Mr. Kositzky cannot, and I doubt whether Mr. Kositzky can tell this Commission right now, how much they have paid from that Company in the last few years.

Mr. Burr: The rates have nothing to do with the question.

Mr. Dotson: Let us have——

Mr. Burr: Just a moment, because I am addressing my remarks to Mr. Shuler.

Mr. Dotson: All right.

Mr. Burr: The rates have nothing to do with the question.

Mr. Shuler: I said nothing about rates.

Mr. Burr: Mr. Laylin did, and you based your objection on the same ground that he did. His objection was that because it is impossible to tell what the rates will be in the future it will be impossible to ascertain the financial requirements of the Company in the way of money to be bor-

rowed from the American Company. The rates have nothing to do with it. The rates are supposed—they never have yet, but they are supposed to produce a fair return upon the property used and useful in the service of the public, [fol. 8761] and that fair return is entitled to go to the people who have had their money invested in this property, to the Company's stockholders, if you please, and it has nothing to do with the amount available for plant capital expenditures.

Mr. Shuler: Your argument in rate cases——

Commissioner Poor: Just a minute. We have had enough argument on this, Gentlemen. We are not determining at this hearing how much money the Bell Company will require in the next two, three or four years. The question is an attempt to justify the payment under the 4½ per cent contract, and one of the services performed by the A. T. & T. Company is financing in whole or in part the needs of the Ohio Bell, without an attempt, so far, by the Ohio Bell to allocate of that 4½ per cent how much is paid for financing. And I do not think it would be very enlightening or very material to the Commission to know how much the financial requirements will be some time in the future.

If it got down to the point where they were allocating and saying that "so much of the 4½ per cent is for financing and so much for furnishing the instruments and things of that kind", it might then be a matter of dollars and cents, but I do not believe it would be very material.

The objection will be sustained.

Mr. Burr: Note an exception, and let the record show that the witness, if permitted to answer the question, would state that the amount estimated to be required by The Ohio Bell Telephone Company beyond its own resources from the [fol. 8762] American Telephone & Telegraph Company for the years 1925, '26, '27 and '28 is not less than $4,000,000.00 per year, or $16,000,000.00 for the four years.

Q. Mr. Kositzky, you have mentioned services which your company has received from the American Company from time to time through correspondence and telephone conversations, special services, difficult in many instances to evaluate in dollars and cents. Has your Company received during the past year from The American Telephone & Telegraph Company, as a part of the services rendered by that Company to your Company under the License Contract, Company Exhibit No. 1——

Mr. Shuler: I object to the question in its form.

Mr. Burr: Will you please wait until the question is finished?

Mr. Shuler: I object to it as far as you have gone.

Q. (Continuing): any services which you can evaluate? The question calls for a yes or no answer.

Mr. Shuler: I object. He is asking this question to draw a conclusion which is based on a contract.

Commissioner Poor: I think the objection is not well taken. Objection overruled.

A. Yes.

Q. What are they?

A. The American Telephone & Telegraph Company furnishes the Ohio Bell Company transmitters, receivers and induction coils.

Q. Now you say they furnish them; did they do that last year?

A. Yes, sir. As explained quite fully in Mr. Rhodes' testimony, I have made a computation of these services for [fol. 8763] the current year and what they are worth to the Ohio Bell Company on the basis of these instruments furnished.

Mr. Burr: The Exhibit may be marked Kositzky Exhibit No. 30.

And thereupon the Paper Writing last above referred to was marked for purposes of identification as Kositzky Exhibit No. 30.

Q. You said, Mr. Kositzky, that the statement is a statement for the current year; did you mean the year 1924?

A. On the basis of the stations in service at the end of 1923, so it would apply as a minimum to the year 1924, since we are adding stations continuously.

Mr. Burr: The exhibit is offered in evidence.

And thereupon the Paper Writing above referred to was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Kositzky Exhibit No. 30 and made a part hereof.

Q. Will you please explain it?

A. This is the valuation of the instrument service, more or less explained by Mr. Rhodes in his testimony and applied specifically to Ohio Bell. Taking the first cost of in-

struments, the receiver, transmitter and induction coil, as $4.50——

Q. How did you arrive at that amount?

[fol. 8764] A. That is a figure somewhat less than the market price of $4.90.

Q. For the same type of instrument?

A. Yes for the same type of instrument, and applying to that the percentage of annual costs, fixed charges as sometimes called, of 21 per cent. Those fixed charges are made up of interest, taxes, administration, depreciation and maintenance.

To every telephone station in service there are more instruments in the use of the Company than stations, as, for instance, we have instruments on switchboards, private branch exchanges, sometimes two receivers on one set, and we have five per cent more instruments than we have telephones. So computing the annual charges on the basis of instruments in service by adding these additional instruments a multiplication of $4.50 times 21 times 1.05, which gives a figure of 99.2 cents. But in addition to the instruments in service there is kept in supply a 6.6 per cent reserve. That is to assure continuity of the supply. And making allowance for this additional six per cent with an annual cost or fixed charge of 11 per cent—in this case the stock instruments do not require maintenance or that other item of depreciation—adds three cents more per station, or a total cost per station of $1,022.

Q. Cost per what?

A. Annual cost per station for the instruments.

Q. Yes.

A. There are in Ohio 495,397 stations as of December 31st, 1923.

Mr. Shuler: May I for information ask a question as to stations? A station means an instrument?

[fol. 8765] The Witness: That means a subscriber's set, your telephone stand or a wall set, if it is such.

Mr. Shuler: The reason I am asking that is to find out how you got 1.05 for the number of sets of instruments per station. Supposing I have a telephone in my residence and an extension upstairs, would that be called one station or two stations?

The Witness: Two stations.

Mr. Shuler: Then every set does not constitute a station?

The Witness: Yes, but we have more instruments. You may have two receivers on one set. That is very frequently done. People that are hard of hearing ask for a second receiver.

Mr. Shuler: That is the reason you get 1.05?

The Witness: That is only a small part. The larger part is we use instruments, transmitters and receivers on all of our switchboards and they are not included.

Mr. Shuler: I see it.

The Witness: They are not furnished by the A. T. & T.

Mr. Shuler: But if I had two telephone desk stands, induction coil, transmitter and receiver, at two places, in my house, then I would have two stations?

The Witness: Yes, sir.

Mr. Gentsch: I did not understand what you said about the extra set on the branch exchange.

The Witness: The transmitter and the receiver on the [fol. 8766] private branch exchange—that is practically the same as a switchboard. Those are included in the five per cent.

Mr. Gentsch: Why are they included in the five per cent?

The Witness: We don't call that switchboard a station. The switchboards are in addition to the stations. The stations are merely the sets that you have on your desk.

Mr. Gentsch: But you get paid for them?

The Witness: Yes, that is why it is included.

Mr. Burr: I think you are talking about different things.

The Witness: Let us see if I can explain that. I have merely converted into terms of telephone stations all instruments in use. In other words, we have, say, 100 telephone stations, subscribers, as explained to Mr. Schuler, and we have then five private branch exchanges. Those five would add five instruments and we would have 105 instruments for every 100 stations.

Mr. Gentsch: I do not get it yet.

Mr. Burr: See if you can say it some other way.

Commissioner Maullar: You mean the additional instruments add five per cent to the stations?

The Witness: Yes, sir.

Mr. Gentsch: What I am trying to get at is where those instruments are and why they are additional?

Mr. Shuler: Mr. Johnston suggests perhaps removals would provide a little additional too.

[fol. 8767] The Witness: Those are in the supplies, but let us see if I can explain it this way. We have 100 telephones connected to a switchboard. That is all we have. The switchboard has five sets that the operators use in giving the service.

Mr. Gentsch: You mean your own office?

The Witness: Yes, sir, in that particular case, but that also might be in one of the big stores, which may have a switchboard with five sets on it.

Mr. Gentsch: Don't you call that switchboard in a private store a station?

The Witness No.

Mr. Gentsch: It is only the extensions?

The Witness: Yes, sir.

Mr. Dotson: Mr. Kositzky, your Item 10, Number of Stations December 31st, 1923, do the amounts given there include the stations served by the Ohio State instruments that were taken over with the Ohio State property?

The Witness: Yes, sir, those are all of the stations listed in Ohio as of that date.

Mr. Dotson: So that they are included, the Ohio State instruments are included then in the computation you have made in this exhibit?

The Witness: In just what way? There are 495,000 telephones in the State.

Mr. Dotson: What I mean is, you are allowing the A. T. & T. Company the same revenue from the use of those instruments as from the Western Electric instruments?

[fol. 8768] The Witness: Those instruments are going out awfully fast and the A. T. & T. are ready to replace every one as rapidly as taken out.

Mr. Dotson: While they are in use it doesn't interrupt or change the payment of 4½ per cent of the gross revenue from the use of those instruments to the A. T. & T. Company?

The Witness: No, I don't think so. Not at all. This is the instrument service as furnished by the A. T. & T. Company on a basis of——

Mr. Dotson: The number of instruments in use by the Bell Company?

The Witness: Yes, sir, the value of the service the A. T. & T. are ready to furnish us.

Mr. Dotson: Regardless of whether they are Ohio State

instruments or whether they are Central Union instruments?

The Witness: That is right.

Q. Now when the Ohio Bell Telephone Company and The Ohio State Telephone Company were consolidated under the present Ohio Bell Telephone Company, The American Telephone & Telegraph Company stood ready to replace all Ohio State instruments with Bell instruments?

A. Yes, sir.

Q. It has been doing that steadily at your request?

A. Yes, sir. It is not economical to go out and replace them arbitrarily, but as soon as a telephone set is returned to the storekeeper, as explained by Mr. Schneider, the new [fol. 8769] set that is sent out is invariably one of the A. T. & T.

Q. In other words, you have been trying to get as much use as you can out of the old Ohio State instruments?

A. That is right.

Q. How fast are they going out of service?

A. Very rapidly. We had something like 30,000 telephones in Cleveland two years ago, 1921. There are less than four or five thousand there today. So they are going out rapidly.

Q. When you say telephones you mean independent type telephones?

A. Yes.

Q. Which have been replaced by Bell instruments?

A. Those are subscribers' stations.

Commissioner Maullar: Mr. Kositzky, what do you do with the instruments you take in?

The Witness: They are being carted away by the junk dealer by the wagonload.

Mr. Gentsch: Do you know how many Ohio State or Independent sets are in use at this time?

The Witness: No.

Mr. Gentsch: How many were taken over in the consolidation?

The Witness: There were over 100,000 subscribers and I imagine there were at least that many.

Mr. Gentsch: Were those 100,000 sets figured in the valuation here?

The Witness: I am reasonably certain that the inventory men, as they inventory the property, inventory what is there.

[fol. 8770] Mr. Gentsch: Inventory what is there at a uniform price?

The Witness: Yes, and as they correct their inventories any instruments removed would be deducted, and if the State was replaced, less the transmitter, receiver and induction coil, it would automatically correct itself.

Mr. Gentsch: Do you know what those Ohio State instruments were inventoried at?

The Witness: At the prices——

Mr. Gentsch: I am asking you whether you know; not a guess, but whether you know what they were inventoried at?

The Witness: To the absolute cent, no, but I can tell you in principle how they were inventoried.

Mr. Gentsch: I am getting it approximately now. How close to $4.50?

The Witness: Well, the Kellogg instrument was $4.90 and the Stromberg costs $5.35.

Mr. Gentsch: Do you know what was credited to salvage when those instruments were replaced?

The Witness: No, I do not.

Mr. Gentsch: Can you find out?

The Witness: I presume that can be obtained, yes.

Mr. Gentsch: Will you let us know.

Mr. Burr: It would be a long job. Of course they have been coming out gradually.

Mr. Gentsch: I am talking about a single instrument, per instrument. If nobody else has any question on that same [fol. 8771] subject, I would like to ask him to explain one other thing here.

Mr. Dotson: Just one other question on this subject. In speaking of instruments, what do you include?

The Witness: When I mention instruments I mean the transmitter, receiver and induction coil. The stand and the bell box we usually call a set, the substation equipment. I think Mr. Schneider referred to the entire installation as instruments, which perhaps technically is not right, although in general telephone terms that is what we call an instrument.

Mr. Dotson: What effect does the retirement of these Ohio State instruments have upon the capital account of the Company?

The Witness: Whenever one is taken out of plant an amount equal to what is supposed to be on the books is

written off of the books. In other words, the books are reduced as fast as these come out.

Mr. Dotson: To what extent is that reflected in the valuation that is claimed for the property in various exchanges or as a rate base?

The Witness: They are deducted through the addition of net additions, and in some instances it is a red figure.

Mr. Dotson: Do you know what deduction is made from the property value of the Toledo Exchange?

The Witness: I do not.

Mr. Dotson: There should be a reduction there, should there not?

[fol. 8772] The Witness: Well, as fast as they are removed they should be deducted.

Mr. Dotson: Do you remember how many Ohio State instruments were in use in Toledo that were taken over by the Bell Telephone Company?

The Witness: I think we had something like 24,000 subscribers' stations and I imagine there were at least that many instruments, plus five per cent.

Q. You were down to Line No. 10. Will you proceed with the evaluation of the services?

Mr. Dotson: Just one moment. Pardon me. I knew there was something more. Are any of these Ohio State instruments reconditioned from time to time and continued in service?

The Witness: Yes; one thing we do right along, Mr. Dotson, is this; we find that these transmitters are interchangeable, and with very little work in the shop we can fit a Western Electric or Bell transmitter on an extension of a foreign make, Kellogg and Stromberg. The receiver is nothing more than an instrument on the end of a cord and that can be attached to anything. We are doing that right along so as to conserve a number of the subscribers' sets that are really fit for use.

Mr. Dotson: Then as a matter of fact you are really not retiring the Ohio State instruments unless they are so impaired that it would not be wise to recondition them?

The Witness: You are speaking now of the instruments [fol. 8773] ments or the subscribers' stand? The stand is reused whenever possible but the instrument, the transmitter, receiver and induction coil, is very seldom reused.

Mr. Dotson: They are seldom reused?

The Witness: Some of them are practically as good as new, and rather than to take the instrument off where it is of the type that will give satisfactory transmission in that particular locality, it is cheaper to leave it on. It saves expense to the Ohio Bell and some to the A. T. & T. Company.

Mr. Dotson: That is being done then with the Ohio State equipment?

The Witness: To a limited extent, yes, sir.

Q. You were down to Line No. 10. Will you proceed to evaluate the services?

A. Item No. ii is merely the reproduction cost of the instruments in Ohio on the basis of 495,397 stations, including the stock supply, or $2,363,044.00.

Q. You have a revised figure for that, Mr. Kositzky.,

A. Oh, I see. I applied that against the stations when it should be applied against Line No. 9—519,000.

Q. What is the answer then?

A. That would be $2,478,697.00.

Mr. Gentsch: I got mixed in this talk with Mr. Shuler. May In interrupt just to get another explanation?

Mr. Burr: Yes, sir.

Mr. Gentsch: I did not get the explanation of that Item 2. How did you figure the 21 per cent?

[fol. 8774] Mr. Burr: I was coming to that, but you might as well have it now. Go ahead.

The Witness: That is what we call annual charge, or fixed charge; for instance, on every dollar invested in subscribers' sets or instruments there are such charges as interest, maintenance, taxes, depreciation, and those items amount to 21 per cent.

Mr. Gentsch: Give us the detail of that.

The Witness: I beg your pardon. The interest is eight per cent, taxes, two per cent, administration, one, depreciation, eight, and maintenance, two.

Mr. Gentsch: You mean it is costing eight per cent to have the A. T. & T. do the financing?

The Witness: That is what it costs them. That is what it is worth to them to supply this property, or what it would cost us if we had to do it, to do it that way.

Mr. Gentsch: May I ask you right there, in No. 11, what is that factor 1.06?

The Witness: That is for the six per cent additional stock that we carry in supplies to assure the continuity of the supply.

Mr. Gentsch: Isn't that figured in your average of instruments up there?

The Witness: No, sir, that is five per cent. That is the additional sets in use. Six per cent is the additional sets in stock.

Mr. Gentsch: I see.

Q. That is to say, you have in use five per cent more of [fol. 8775] instruments than you have stations?

A. Yes, sir, that is right.

Q. That is due to the factor that you explained to Mr. Gentsch awhile ago; in addition to that five per cent you carry in stock an additional number of instruments equivalent to six per cent in order, as you say, to provide a continuous supply?

A. That is right.

Mr. Gentsch: Now let me ask one more question before it gets out of my mind, and then I will not interrupt any more. If the instrument cost $3.30 instead of $4.50 the calculation would be affected to the extent of that difference, wouldn't it?

The Witness: If it did, yes, sir.

Mr. Gentsch: Isn't it a fact that the A. T. & T. price is $3.30 instead of $4.50?

The Witness: I don't know. I have heard Mr. Rhodes say that the A. T. & T. Company were able to buy from the Western at that price but that does not say that the Ohio Bell could.

Q. What do other companies pay for these instruments in the market?

A. The discounted price is $4.90 upwards, and the Western Electric sell to the trade an instrument very similar to this at $5.80.

Mr. Harshman: Your Exhibit No. 30 shows services rendered to The Ohio Bell Telephone Company by the General Staff of The American Telephone & Telegraph Company; then of course the price which the American Company pays should be the basic price, and not what they might charge [fol. 8776] some other company?

The Witness: In other words, if the Ohio Bell Company had to do this work and furnish this instrument itself this is what it would be worth to us.

Mr. Harshman: Well, I know, but——

Mr. Burr: The witness starts to answer and when it gets

to the point where it is not what somebody else would like to have it, about four men interrupt him at once.

Mr. Harshman: This is not a question of what somebody else might have to do. It is a question of justice, what is right, what the services are that the American Company is rendering to the Ohio Bell Company. If you are going to calculate that you have got to calculate it on the basis of what that instrument costs the American Company, and not what it would cost the Ohio Bell Company or any other company.

Mr. Burr: That is not correct. But apart from that, what I am talking about is the justice of permitting the witness to finish his answer. You ask him a question and then before he has had time to finish his answer he is interrupted by three or four gentlemen on your side, and the stenographer cannot get what the witness says, and that was what was being done at the time when I interjected my objection. Please understand we will give you whatever information you want, but when the witness starts to answer he is entitled to finish it.

Mr. Harshman: His answer was not responsive and I submit the record will proce it.

[fol. 8777] Mr. Burr: If that be so, and I do not admit it is so, certainly it is not the way, to prevent the witness from completing his answer; assuming you do not like the answer, the proper way to do it is by objection to the Commission.

Mr. Harshman: Of course for a long while we have been going along here without observing the proprieties. There has been an awful lot of that.

Mr. Burr: The testimony on this exhibit will look like hash in this record.

Mr. Harshman: It ought to. It mostly is hash.

Commissioner Poor: The Commission understands that this exhibit is introduced for the purpose of showing what the company, The Ohio Bell Company, has saved by reason of the A. T. & T. furnishing this thing, and not as representing what it costs the A. T. & T. to furnish it.

Mr. Harshman: It is an exhibit for the purpose of justifying a charge by the A. T. & T.

Commissioner Poor: Yes, but their method of attempting to show that is by showing what they saved; whether that is a right way of determining what that value is is different;

and they have a right to put it in in this manner. Whether that is sound is for the Commission to determine.

Mr. Harshman: Well, all right, if it is for the Commission to determine as to its soundness.

Mr. Dotson: It would be well, it seems to me, to have in the record the fact as to whether this is based upon the [fol. 8778] cost to the Bell Company; that is, upon an assumed cost. While they don't sell it they probably price it out.

Commissioner Poor: The witness has said it is based upon what it would cost the Bell Company if they had to go out and buy this instrument.

Commissioner Maullar: In the open market.

Mr. Harshman: I submit that that is a false premise.

Commissioner Poor: That might be, but it is a matter for argument.

Mr. Dotson: Do you know what these instruments cost the American Company?

The Witness: No, I do not, except what Mr. Rhodes testified to when he was here in Columbus a few weeks ago.

Mr. Dotson: How much was that?

The Witness: I think something like three thirty or forth cents.

Mr. Dotson: The record will show, although I have forgotten myself.

The Witness: I think that is right.

Line No. 12 is the instrument service, by the application of Line 8—that is the total annual cost per station, to the number of stations in Line 10, $506,296.00, that is what it would cost the Ohio Bell Company if they had to supply these instruments themselves.

Q. Now you have shown us the cost of the instrument service, which, if your Company were to provide it, would increase the Company's annual cost by something like [fol. 8779] $500,000.00. By taking advantage of improvements brought out by the American Company, and of which your Company has had the benefit, have you made any computation as to the savings, both in first costs and annual charges, resulting from them?

A. Yes, sir, I have.

Q. By "resulting from them" I mean resulting to your Company from them?

A. That is right.

Q. Have you a summary of a few of the items which show the savings in the improvements made from time to time as applied to the exchange properties of your company and as against the practices followed at the time those improvements were made?

A. Yes, sir, I have a list here of 11 items, which is only a partial list, showing the savings of first cost and annual charges in which the improvements we have availed ourselves of from time to time resulted to this Company as against the situation where we had not those improvements.

Mr. Burr: That list may be marked Kositzky Exhibit No. 31, and is offered in evidence.

Mr. Shuler: May we have the data?

Mr. Burr: Yes, I was going to ask the witness to give you the basis of the amounts shown in the exhibit.

And thereupon the list above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Kositzky Exhibit No. 31 and made a part hereof.

[fol. 8780] Q. You may proceed to do so, Mr. Kositzky.

A. Item No. 1 is fine wire cables, excepting the 900 22-guage size and the 24-guage size. In other words, up to a certain period we had only available to us cables composed of 19-guage wire. The A. T. & T. Company developed the 22-guage cable, which is a smaller wire, and increased the capacity of the cables.

The difference in cost between the 19 and 22-guages and where we have a 22-guage cable of over 300 pair size, which at that time was the maximum size, of course it would require two cables and the conduits would require additional ducts—the saving in the difference in those cables, together with the additional cost necessary because of the larger duct capacity, amounted, taking the cables that were in service at the end of 1923, a first saving of $9,414,788.00, and computing against that item, which is a difference of first cost, a percentage of annual charges of 15.68 per cent for underground cables, 20 per cent against aerial cable and 14.1 per cent against the conduit, results in an annual saving of $1,554,148.00.

Then the A. T. & T. came along and developed a 900 paid cable, 22 guage, and also a 24 guage cable. This again increased, you might say, the capacity so far as wires were concerned, of the cable plant, and also reduced the cost per cable or per pair, for that matter, and where formerly 600 pair 22 was our maximum size, we now were able to have 900 pair 22 guage; and similarly we were able to have 1200 pairs on 24 guage conductors or 24 cable.

[fol. 8781] That again resulted not only in a saving in cable but conduit. We computed, taking the property as of the end of 1923, a first cost of $1,323,699.00, or an annual cost, applying the same percentages to the various items of plant, of $198,202.00.

Now about 1913, '12 or '13, as Mr. Rhodes explained, they developed the lead-antimony alloy sheath. Prior to that time for every 100 pounds of metal which enclosed the cable core, there was three per cent tin and 97 per cent lead. The use of antimony required only one per cent antimony and 99 per cent lead, or a saving to every 100 pounds of two pounds of tin, substituting two pounds of lead.

The price of antimony is 8¼ cents per pound, lead 10½, tin 53 cents a pound. Where we formerly had three pounds of tin at $1.59 we now used one pound of antimony at 8¼ cents, and two pounds of lead at 10½ cents, 21 cents, or a total of 29¼ cents for the three pounds, as against $1.59, or a saving of about $1.29¾.

In the exchange plant alone we have over 20,000,000 pounds of alloy of the antimony type, and that, applied against the $1.29¾, gives us a first cost figure of $271,100.00, as shown in Line 3.

Applying that to the annual charge saving it is $38,368.00.

Q. You spoke in that answer of cable core; didn't you mean cable sheath?

A. No, the cable sheath encloses the cable core.

Q. I see.

A. The A. T. & T. developed a copper-steel twisted pair [fol. 8782] wire. Formerly we used a pure copper No. 14. The copper-steel is a steel core copper clad and that is surrounded by an insulating compound. The difference between the 14 copper and the 17 copper clad is about $1.13 per foot in place for the material. There are 106 million plus feet of that type of wire in the plant. That gives a first cost saving of $1,208,670.00, and applying to that the annual

saving of fixed charges gives us a saving of $374,688.00.

Q. What is the percentage, the fixed annual charge? It is merely a matter of arithmetic.

A. It is 31 per cent in that case, the depreciation being 15 per cent on that type of wire.

Item 5 is duplex cable. I think I better refer to that under toll savings as the item there is very much for that purpose.

No. 6 is the loading of inter-office trunks. That is, with the introduction of loading coils it was possible to apply them to a smaller gauge wire and get a transmission equivalent of a very much larger wire. The introduction of those loading coils in cities where it is necessary to load inter-office trunks resulted in a saving, as against the use of the larger wire, which means more cables and more conduits, of $3,685,722.00; and the annual charge rate applied to that at 15.16 per cent for the cable and 14 and a fraction for the conduit gives the annual saving of $517,843.00.

Mr. Anthony explained items 7 and 8. I merely included [fol. 8783] the totals here to arrive at the grand total of exchange savings.

No. 9 is the improved local switchboard cords. Prior to a certain date we had the steel cord. I have one here. The switchboard cord is what the operator uses at the switchboard in order to complete the telephone connection. This end is fastened underneath the switchboard and when not in use all that is visible for the operator is this much of the cord. There are weights mounted on a pulley which always tend to keep this cord out of sight. When she uses it she raises the plug, being this end, and makes the connection. Formerly these three conductors in these wires were steel and it required heavier weights to keep them down; and also the steel was a poorer conductor of electricity and impaired the transmission and the steel would get hot and they had a number of cord fires.

So the A. T. & T. developed this tinsel cord.

By the way, this is the appearance of the cord ordinarily. I have removed the outer covering just to show the wires in here, how they are made up; and then at this end I stripped the insulation and separated it so that the detailed make of the cord will be visible. These are some very fine strands of a copper alloy—I think it is bronze; I am not certain—each one of the conductors consisting of 15 of these. They are not round, they are like ribbon, which is wrapped by

silk thread. These altogether make one conductor. There are three sets of conductors in this cord.

Now the cord itself costs more than the old-fashioned [fol. 8784] steel cord, but this cord will last two years where the former cord only lasted four months. Furthermore, the old cord required repair about every month, while this cord requires repairs only about once in eight months.

So that the saving in the cord in, say, a two year period, or the life of this new cord, is about $1.99, and there are over 125,000 cords in the plant. When the cord is replaced it is charged directly to maintenance. It is not capitalized at any time. When replaced it is handled through the maintenance account. And the savings cost per year, through the introduction of this cord is $249,906.00.

The A. T. & T. Company also developed a new type relay. Instead of the old bulky gravity relay used prior to that time, this new relay is a spring relay. The manufacturing cost is less, the maintenance is less, it takes up less space and it is of course much cheaper. The saving in difference in first cost, taking the relays in service in Ohio, at the end of 1923, was $125,028.00, and the annual charges $27,882.00.

Up to about 1915 we used for contact metal platinum, but the price of platinum became prohibitive about this time and they developed a new contact metal. I am not exactly certain of its composition. I think it is mostly palladium. This is much cheaper and answers the purpose as well as platinum; a saving, taking the Company as a whole, of $370,080.00 by this cheaper metal as against what platinum would cost, or an annual charge of $68,465.00.

This makes a total of savings due to the improvements [fol. 8785] in first cost of $16,654,208.00 and annual charges of $3,440,802.00.

Mr. Dotson: That is computed on a five year basis?

The Witness: This is taking the condition at the end of 1923 and whatever improvements are in effect, in order to get the equivalent of what we have today. This is what the additional investment and the carrying charges on that investment would amount to.

Q. Now these savings to which you have referred in Exhibit No. 31, apply, if I understand, to exchange?

A. That is right.

Q. Have you made a similar computation in savings re-

sulting from the improvements evolved by the General Staff and effecting the toll property of the Company?

A. Yes, I have.

Mr. Burr: The list of savings may be marked Kositzky Exhibit No. 32 and is offered in evidence.

And thereupon the list above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Kositzky Exhibit No. 32, and made part hereof.

Q. Explain it if you please?

A. Item No. 1 is the saving due to the employment of lead-antimony cable sheath, as explained in the former exhibit, and in this case applies to the toll cables.

The saving in first cost is $17,945.00, and annual charges of $2473.00.

[fol. 8786] Likewise, of Item No. 2, saving due to copper-steel twisted pair wire as applied against the toll plant, which is a small item, $923,00 in first cost, and $286.00 in annual charges.

The item of duplex cable is quite an interesting one. As we explained yesterday, and also as shown by Mr. Rhodes, the introduction of the duplex cable saved, you might say, 50 per cent of the conductors formerly required in a cable. So taking the number of duplex cables the amount of cables of this kind in the State of Ohio, and assuming that the Ohio Bell had not had the advantage of the duplex cable improvements, and yet provided itself with the same equivalent in physical conductors or additional cable and conduit where such would have been necessary in order to get the same equivalent in circuits, would amount in first cost to $709,-563.00 and an annual cost of $105,183.00.

Item No. 4, the loading of open wires and toll cables, the loading coils applied to the transmission of the cable plant, both open wire and cable, of course increased the transmission of the toll plant. If these loading coils were not available to the Ohio Bell Company and to obtain the same equivalent in transmission they were to use the larger wire in both cables and wire, and where, as I explained yesterday, if a loading had not been applied to the Akron-Cleveland cable, open wire leads would have been necessary, that [fol. 8787] additional investment, to give us that equivalent,

would amount to $820,171.00, or annual charges of $137,311.00.

No. 5, open wire phantom circuits. In order to provide physical circuits in place of the phantom circuits now in use in Ohio, in case the phantom development had not been available, would require additional wire, cross-arms and pole line investments.

This first cost amounts to $7,601,744.00 or, in annual charges, $1,453,485.00.

Mr. Shuler: Is that for the phantom circuits now in existence in the plant?

The Witness: That is right.

Mr. Shuler: And all the phantom circuits in the plant are of this type?

The Witness: Yes, sir. Introduction of repeaters have still further increased the transmission possibilities of the open wire plant in Ohio. We have a number of such repeaters in Ohio, as I explained yesterday, and to get the equivalent transmission without the use of the repeater would have required additional copper, both construction and so on, which evaluated would amount to $736,110.00 in first cost, and $104,828.00 in annual charges.

Items 7 and 8 were explained in some detail by Mr. Anthony and are merely carried as totals in this summary.

No. 9, Improved toll switchboard cords, is the application of the same savings as explained in the previous exhibits [fol. 8788] applied to the toll plant.

No. 10 is the improved line of cut-off relays as used in the toll plant and as explained in the former exhibit.

The item for the switchboard cord, by the way, is $15,842.00, and for the improved line of cut-off relays $7981.00, or annual charges of $1780.00.

The cheaper contact metal employed in the toll equipment would amount, in first cost to $23,622.00 and annual costs $4.370.00 or a total saving, in first cost, of $10,803,795.00 and in annual costs of $2,454,222.00.

Q. What are the total savings of exchange, toll and instrument service in the State of Ohio?

A. The total exchange savings, in first cost, $19,132,785.00; annual charges, $3,947,098.00; toll, $10,803,795.00, first cost; and annual costs, $2,454,222.00; or a grand total of $29,936,580.00 in first cost, and $6,401,320.00 in annual costs.

Q. Isn't there an error in one of those computations?

A. Yes, there is an addition that was discovered—that was added in pencil; I did not notice that those exhibits showed that difference. It merely adds to the figures $18,650.00 in the item of annual charges, or giving a revised total of $6,420,180.00.

Q. There is a mix-up in addition?

[fol. 8789] A. I misread my figure here.

Q. Have you an exhibit covering your last answer? Isn't it covered by the paper which has been marked for identification Kositzky Exhibit No. 33?

A. Yes, sir.

Mr. Burr: We offer Kositzky Exhibit No. 33 in evidence.

And thereupon the paper writing above referred to was marked for purposes of identification and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted, marked Kositzky's Exhibit No. 33 and made part hereof.

Q. Now the exhibit shows certain corrected figures in lead pencil. Will you read those into the record in order that the record may show that the corrections were made at the time the exhibit was offered?

A. Under exchange, the first item, including instrument service, $19,132,805.00, as a saving in first cost; and $3,947,098.00, saving in annual charges.

Under toll, $10,803,795.00, saving in first cost, and $2,454,222.00, savings in annual charges; or a total, not including anything for legal, financial, accounting, use of patent service, of $29,936,600.00, savings in first cost, and $6,401,320.00, savings in annual charges.

Q. The last figure is $6,401,320.00?

A. That is right.

[fol. 8790] Q. Now the payment to the American Company under that contract last year was what, approximately?

A. I haven't ever figured out; I think it was about a million dollars.

Q. So that even if you divided the six million approximately of savings by six and allow nothing for the lega-, financial or accounting services, or use of patents, and the other improvements not evaluated, it equals about the amount of the payment?

A. Just about.

Mr. Dotson: That is argumentative.

Mr. Burr: Oh, it is arithmetic.

Q. Can you give us an idea of the savings, totalling some $6,400,000.00, as they are appliable to the principal exchanges in Ohio?

A. I would first eliminate the toll, take the exchange service savings only, I have made some computations here.

For Toledo, the savings in first cost, $1,368,924.00.

Mr. Dotson: That is first cost?

The Witness: Annual costs, or annual charges, $293,769.00.

For Columbus, savings in first cost, $1,967,580.00 and annual costs or annual charges, $422,317.00. For Akron, $739,167.00, savings in first cost, and $158,417.00, savings in annual costs. For Dayton, $940,460.00, savings in first cost, and $201,834.00, savings in annual charges. In Canton, $427,528.00, savings in first cost, and $91,745.00 savings in [fol. 8791] annual charges. For Cleveland, $9,650,793.00 savings in first cost, and $1,937,068.00 savings in annual charges.

This does not include the legal, financial, accounting or other services not mentioned.

Mr. Burr: You may cross-examine.

Mr. Gentsch: Does this conclude Mr. Burr's testimony?

Mr. Shuler: Does this conclude your case, Mr. Burr?

Mr. Burr: With the exception that when we meet for the cross-examination we would like to have the privilege of calling one witness for a short examination, the witness not being available at this time. I have already mentioned it to some of the gentlemen here and the Commission. We are unable to produce the witness at this hearing, although we have tried. We ask the privilege of calling him at the next hearing just before the cross-examination starts.

Mr. Shuler: Then does this mean that the toll case or the 4½ per cent case, so far as you are concerned, is closed?

The Witness: So far as we now know, we are finished.

Mr. Gentsch: Have you any objection to saying who the witness is and what his testimony will show?

Mr. Burr: It will be on the question of the value of the financial services.

Commissioner Maullar: I would like to ask just one question. Do you know whether or not the independent

[fol. 8792] telephone companies of the State of Ohio are enjoying the benefit of many of these improvements in the equipment that you have mentioned in this Exhibit 31 and Exhibit 32?

The Witness: Yes, sir, they are.

Mr. Hagelbarger: Mr. Kositzky, I have been requested to ask you if you have made any computations for the City of Massillon, the same as you have for the other cities?

The Witness: Yes. I did not read those figures.

Mr. Hagelbarger: Will you do so?

The Witness: The saving in first cost, $156,284.00 in annual costs or annual charges, $31,238.00.

Mr. Dotson: Mr. Kositzky, the equipment you have enumerated in your Exhibits 31 and 32 have been purchased by the Ohio Bell Company from the A. T. & T. Company at regular market prices for such equipment?

Mr. Burr: That is not correct.

Mr. Dotson: The witness is to answer.

The Witness: No, sir.

Mr. Dotson: Oh, they have been purchased from the Western Electric Company, all of them?

The Witness: Many of them. Most of them.

Mr. Dotson: What part have not been purchased and are not owned by the Bell Telephone Company, The Ohio Bell Telephone Company? I am referring to the equipment you have specified in Exhibits 31 and 32?

Mr. Burr: You understand what he means by the question.

[fol. 8793] The Witness: I don't know exactly that I do; I do know this, that we are buying materials from other sources from the Western Electric, but it is under the A. T. & T. Company's specifications.

Mr. Dotson: What I mean is, you are buying the equipment manufactured by the Western Electric Company and the Western Electric Company is employing the improvements mentioned by you in these two exhibits 31 and 32 in the manufacture of that equipment?

The Witness: That is right.

Mr. Dotson: Now you purchased that equipment, or have purchased that equipment from the Western Electric Company at the regular market price?

The Witness: That is right.

Mr. Burr: That is the regular market price to associated Bell Companies?

The Witness: Yes, sir.

Mr. Shuler: I object to Mr. Burr putting language in the witness' mouth.

Mr. Dotson: Is that market price any different from the market price paid by your connecting companies, if you know?

The Witness: I don't know right at this minute, but I have made investigations in the past and the market price was different.

Mr. Dotson: In what respect?

The Witness: We buy our materials for less money than [fol. 8794] the independents are able to get similar material.

Mr. Dotson: I mean now the price which the Western Electric gets for this equipment, no matter who the Western Electric sells, does not The Ohio Bell Telephone Company pay the same price that any other purchaser of this equipment pays when it buys it from the Western Electric Company?

The Witness: No, sir. The Independents cannot buy cable, for instance from the Western Electric Company as cheaply as we buy it.

Mr. Dotson: Why is that?

The Witness: Because we have a special arrangement with the A. T. & T. Company and with the Western Electric Company that gives us that advantage.

Mr. Gentsch: You mean it puts the other fellow at a disadvantage.

Mr. Dotson: That is because the Ohio Bell Company is owned by the A. T. & T. Company, who owns the Western Electric Company; isn't that true, as a matter of fact?

The Witness: Well, that is because of our contractual relations.

Mr. Dotson: Well, the 4½ per cent contract does not provide anywhere in it that The Ohio Bell Telephone Company will be permitted to purchase any of the material mentioned here or those manufactured by the Western Electric Company at a less cost than the Independents, does it?

The Witness: No, but we have contracts with the Western Electric Company. Those contracts can only be made by [fol. 8795] the Bell Companies.

Mr. Dotson: That is outside of this 4½ per cent contract?

Mr. Burr: Not at all, if you will read the contract. The contract is the best evidence.

Mr. Dotson: You have talked about the contract so I am taking the same liberty. Now on what basis do you allocate the alleged savings to Toledo; what basis——

The Witness: Well, I take the savings for the State as a whole, as I have computed them in Exhibit No. 31, and then I know what percentage the Toledo property is of the State as a whole, and I have allocated it on that basis.

Mr. Dotson: On what basis do you figure that percentage?

The Witness: On the value of the property in the Toledo area.

Mr. Dotson: The total number of stations?

The Witness: On the property for the exchange savings, and the stations for the instrument savings.

Mr. Dotson: Is that the same basis you applied all over the State to the various exchanges you have mentioned?

The Witness: Just these few larger ones. It would not apply to the very small ones in the same proportion, and for that reason I have not tried to allocate it to the smaller ones.

Mr. Dotson: Something has been said here at various times that in Toledo the Company is not permitted to run [fol. 8796] telephone wires on electric light poles—I want to ask you a question or two about that—and that by reason of this the installation, operating and maintenance costs are proportionately much higher, or increased, rather, above that of what it would be if they were permitted to jointly use the same poles; that is true, isn't it?

The Witness: That is true as far as the poles are concerned, yes.

Mr. Dotson: Now to what extent is the cost of installation, operation and maintenance increased in Toledo by reason of this fact, do you know?

The Witness: I haven't figured it; I couldn't answer that.

Mr. Dotson: Do you know whether anybody has any figures on that?

The Witness: It is pretty difficult. All we can say is, from experience it would be greater.

Mr. Dotson: But if the Company would be permitted now to make joint use in Toledo with the Electric Light Company, this, in your judgment, would effect the savings in the respects I have mentioned?

The Witness: Yes, sir.

Mr. Dotson: To what extent would that savings be re-

flected in the rate that you are asking for in the Toledo Exchange area?

The Witness: I cannot answer that.

Mr. Dotson: Do you think it would be reflected?

The Witness: There would be a lower plant investment. [fol. 8797] It would take some years to remedy the condition that is now there. But, however, if you do not start today it never will be remedied. So that at some future date there no doubt should be a big advantage in that.

Mr. Dotson: In a considerable portion of Toledo, joint use of poles is made; has that fact been taken into consideration in arriving at the proposed rate in Toledo?

The Witness: It is based on the valuation of the property, and the cheaper you can build that property, the less there will be for maintenance, depreciation and return necessarily.

Mr. Dotson: Well, you will be off the witness stand a little later and I will probably want to talk to you.

Commissioner Poor: I believe we have the week of April 21st set aside for cross-examination in this matter.

Mr. Dotson: Before we adjourn I have a number of requests I would like to make of several witnesses. I have them typewritten, so that I will not read them into the record.

One pertains to Mr. Schneider, one to Mr. Anthony and a few questions here to Mr. Kositzky.

Counsel for the City of Toledo presented the following requests:

Schneider Exhibits

Referring to Schneider Ex. No. 1, we would like to know what the composite life is, of the entire plant, based on this exhibit, as well as the composite annual depreciation rates. [fol. 8798] We want a detailed outline of the method of calculation, with supporting data and sufficient detail to check.

We want the detailed calculations of contral office, equipment, station apparatus, station installations, interior block wires, private branch exchanges, booths & special fittings, together with supporting data for all items appearing in this exhibit in sufficient detail that we can check.

We are particularly interested in the details of how the net salvage was arrived at and in this connection we would request that the company furnish us with examples of actual

entries in their books of account, as well as supporting plant records, estimates and orders that are relevant.

In regard to Schneider Exhibit- 2 and 10 inclusive, we want a detailed calculation of one point on each of the curves in these various exhibits, together with all of the supporting data so that we may check these exhibits in detail.

The above data to include the detailed calculations for a point on the curve labeled "Plant in Service at Beginning of Year" and also a point on the curve labeled "Reverse accumulation of Gross Additions".

We are particularly interested in a clear definition of what you mean by extraordinary repairs, together with an analysis of what this includes.

Referring to Schneider Exhibit No. 11, we want to know [fol. 8799] what the composite life would be which corresponds to the column E and D, in other words, what is the composite life based on the 7.03, as well as the composite life based on 7.28, and supporting data.

We would also like to know what the proper realized depreciation would be based on these annual rates.

Anthony Exhibits

On what data are the Anthony Exhibits based?

We would like to have a detailed outline of the design of the local training switchboard for both A & B?

Why should they differ as between cities?

We want to know wherein this equipment would differ, for instance in Toledo from that in Columbus or Youngstown or Dayton.

In what way does the toll fundamental plans or plan effect the traffic conditions?

If a fundamental plan takes care of the force requirements for 15 to 20 years, how often is a fundamental plan made?

What proportion of the total cost of the fundamental plan does the part covered by traffic bear to the total?

What was this cost in Toledo when the last fundamental plan was made?

When was the last fundamental plan made?

How do you check your single ticket method for accuracy; in other words, what is the control?

Referring to the #1 C board, as we understand it, this

[fol. 8800] is the full feature multiple lamp board. What is the average time to complete an A board call?

What is this in traffic units and what is a traffic unit?

What is the answering time on a board equipped with a traffic distributer?

How does it compare with the #1 C or full feature manual?

How many traffic units or what portion of a traffic unit is utilized in completing a call on this type of board?

How does it compare with full automatic and auto-manual operating, covering comparison by traffic units?

Under average conditions including the average number of outgoing trunks, what is the practical unit of manual operation?

Also furnish full details and supporting data of the following:

1. Single ticket toll operating method against two ticket method showing the savings claimed of $570,000.00 in 1923.

2. Prepay coin boxes showing the savings claimed of $139,031.00.

3. Machine ringing showing a savings of $267,377.

4. Overlapped ringing showing a savings of $76,318. and showing in what particular this is an advantage to the subscriber.

Who, if you know, originated what is known as the fast manual, similar to your #1 C, that is having multiple lamp [fol. 8801] signals and feature cords?

Who developed and owns the fundamental patent on automatic coin collectors?

Who owns and developed the fundamental patent on the motor generator ringing equipment?

G. A. Kositzky

Furnish complete supporting data of cost of fundamental plan of Toledo showing the portion of the costs incurred by the A. T. & T. Company and the amount incurred by the Ohio Bell Company.

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[fol. 8802] Frederick L. Rhodes, recalled as a witness for purposes of cross-examination, testified as follows:

Cross-examined by Mr. Kinnison:

Q. Mr. Rhodes, your connection with the telephone business began in 1893, did it not?

A. 1892.

Q. That was the year in which you received your degree at the Massachusetts Institute of Technology?

A. That is right.

Q. And you have been connected with the telephone business and with the parent company in the telephone business ever since that time?

A. Yes, first with The American Bell Telephone Company and then with The American Telephone & Telegraph Company.

Q. At the time you commenced your service The American Bell Telephone Company was occupying substantially the same relation to the telephone business that The American Telephone & Telegraph Company now occupies?

A. Well, I cannot say as to how completely. It was the company that furnished the services under the license contract at that time.

Q. How is that?

A. It was the company that furnished the license contract services at that time. My connection with the business has been with the furnishing of these services and I was connected with this work at that time.

Q. Has your connection been entirely with the furnishing [fol. 8803] of these services?

A. Yes.

Q. The American Telephone & Telegraph Company was organized in what year?

A. Why, I am not sure, but I think it was about 1885.

Q. 1885?

A. That is my recollection. It is a matter of record. I can ascertain it if you wish.

Q. Now I am asking about The American Telephone & Telegraph Company.

A. Yes.

Q. When it took over the business of The American Bell Telephone Company?

A. It was either in 1900 or 1902 that I was transferred to the American Company. I can tell you that—1900.

Q. 1900. Then the American Telephone & Telegraph Company was organized in 1885; is that correct?

A. It was very early in the business—for the operation of the Long Lines service.

Q. And it existed along side of The American Bell Telephone Company from 1885 until 1900?

A. It had an early existence. I may be able to find that date for you in one of the early annual reports. I am not sure. I don't happen to find it, but it is a matter of record. But I can look it up and let you know.

Q. Will you do so, please.

The Witness: Do you remember, Mr. Burr, what that date was?

Mr. Burr: No.

Q. There was a period, however, of several years when these two companies existed at the same time?

[fol. 8804] A. Oh, yes.

Q. When was The American Bell Telephone Company organized?

A. In 1880.

Q. Now is that the first organization of Bell interests in the telephone business?

A. No, sir.

Q. What was the organization prior to that time?

A. The National Bell Telephone Company.

Q. When was that organized?

A. March 13th, 1879.

Q. Now was that the first company organized to operate the telephone business?

A. I think not.

Q. What before that?

A. There was a Bell Telephone Company, so-called, July 30th, 1878.

Q. Is that the first?

A. That was preceded by a voluntary association called the Bell Telephone Company. That began in August, 1877.

Q. Was that the first?

A. As far as I know, it was, yes, sir.

Q. That is the beginning of the Bell telephone industry, is it?

A. Why, yes, I think as far as an organization goes.

Q. In an organized way?

A. I think so.

Q. Was that a commercial organization? Did it establish lines and furnish service to the public?

A. I don't know.

Q. Did it do anything more than develop the industry in a scientific way and get ready to go into business?

A. I cannot say as to that either.

Q. Can you tell who organized that organization?

[fol. 8805] A. No; that again is a matter of record.

Q. Where is it a matter of record?

A. Why, I think that there was in our Bell Telephone Quarterly, a recent number,—one of our people collected a good deal of information about that early historical period and I think it can be obtained for you.

Q. Do you know what business it did while it was in existence?

A. Beyond—no, beyond the fact that it is my best knowledge that it furnished the instruments and services to the licensees.

Q. You are now talking about The Bell Telephone Company, a voluntary organization, not a corporation, which was organized in 1877?

A. That, and its successors, yes, sir.

Q. Its successors were those which you have named, in inverse order?

A. Yes, sir.

Q. You have named all of them leading up to The American Bell Telephone Company, which was organized what year?

A. March 19, 1880. That is to the best of my knowledge and belief, sir.

Q. Then The American Telephone Company was organized in 1885?

A. Yes, sir.

Q. And the American Bell Telephone Company continued in existence down to what time?

A. I am not sure as to that, but not very many years ago.

Q. But it transferred the business, the telephone business, in which it was engaged in the year 1900, is that correct?

A. By telephone business you mean what we have been [fol. 8806] talking about, the furnishing of these instruments and service? That I testified occurred in 1900. I remember that because my transfer was made from the payroll of The American Bell Telephone Company to The

American Telephone & Telegraph Company at that time and my associates were so transferred.

Q. That was in 1900?

A. Yes, sir.

Q. Now, after 1900, what did The American Bell Telephone Company do, what business did it engage in?

A. As far as I know it retained, or rather the ownership of the instruments was in its name for a good many years.

Q. But all of the business was handled by The American Telephone & Telegraph Company?

A. All that I had anything to do with.

Q. What was the function of The American Bell Telephone Company during this period?

A. I don't know. You know I have not been mixed up in the corporate matters. I have been concerned with this job of furnishing the services, and all of the information I have picked up about it, what I happen to know about those early corporations, was drawn from an article written by some person in our organization going over the early history.

Q. Can you produce that for us?

A. Yes, sir.

Q. Will you do so?

A. I cannot right now.

Q. The American Bell Telephone Company, as I understand you, did nothing excepting furnish service under the license contract to the licensee companies, is that correct?

A. Why, in the very early days it had an ownership in the associated companies, a partial ownership in the asso-
[fol. 8807] ciated companies.

Q. Did it, as a matter of fact, organize associated companies?

A. I cannot say as to that.

Q. Is that a matter of record?

A. I do not know.

Q. What was the first company operating in the State of Ohio as a licensee company, do you know?

A. No, sir, I haven't any idea.

Q. Was there any company engaged in business in the State of Ohio under a license from the Bell Company prior to the Central Union Company?

A. I don't know.

Q. Do you know when the Central Union Telephone Company first began business in the State of Ohio?

A. No, sir.

Q. Was it engaged in conducting a telephone business in the State of Ohio in the year 1892 when you went with the Company, when you went with the American Bell?

A. I could not say. I was pretty fair down the line when I started and I did not know much about such matters.

Q. What was the first information you had, or the first connection you had as an employe of The American Bell Telephone Company with the Central Union operating a telephone business in the State of Ohio?

A. Why, I cannot remember, sir. I suppose that some of the work that I did within a few years after I came with the American Company was for the benefit of whatever company was operating here in the State of Ohio, but what its name was I don't know; I cannot remember.

[fol. 8808] Q. You have not been connected with The American Bell Telephone Company in any way since 1900?

A. That is right.

Q. You knew, however, of its existence down to how late, how long ago?

A. Why, I should suppose somewhere perhaps six or eight years ago.

Q. About that time it was dissolved and went out of business?

A. It was wound up. However that was done I do not know.

Q. What was it doing in the last few years between 1900 and the time when it was wound up?

A. As far as I know the instruments were stamped as the "property of The American Bell Telephone Company." Beyond that I don't know.

Q. That is, not only the instruments that were in existence when The American Telephone & Telegraph Company took over this instrument service, but new instruments that were furnished, continued to be furnished by The American Telephone & Telegraph Company and put out under license to the associated companies by The American Telephone & Telegraph Company, is that correct?

A. I think the instruments were put out by the American Company and they were stamped the "Property of The American Bell Telephone Company."

Q. Were they in fact the property of The American Bell Telephone Company?

A. I am sure I could not tell you about that fact.

Q. Do you know what the relation was between The American Telephone & Telegraph Company and The American [fol. 8809] Bell Company?

A. No, sir.

Q. Was there any contract you know of existing between those companies that covered this instrument service in any way?

A. Not as far as I know.

Q. Did you have any relations yourself in any of your work with any officers or employes of The American Bell Telephone Company during that period?

A. I might have unconsciously, but there was nothing to bring the fact to my mind.

Q. There was nothing then so far as your connection with the business of the A. T. & T. Company was concerned that differentiated the transactions of the A. T. & T. and The American Bell Telephone Company?

A. No. All that I knew was, as I said, that I was part of this organization furnishing these services and I did change from one payroll to the other and I gave you the date. Now that is all I know about it.

Q. Was there any change in the character of your services coincident with the change from one payroll to the other?

A. No, sir.

Q. You continued to perform the same services in the same manner?

A. Yes, sir.

Q. Reported to the same superior officer?

A. Yes, sir.

Q. The two organizations were identical, were they?

A. I would not say that. All I know is my relation to it was the same.

Q. Were the same persons concerned in the two com- [fol. 8810] panies as general officers?

A. I could not say that, sir.

Q. Do you know anything at all about the personnel of the boards of directors of the two companies?

A. No, sir.

Q. Do you know anything at all about the management officers of the two companies?

A. No, sir.

Q. Who was the president? Who was the last president of The American Bell Telephone Company?

A. I don't know. I could tell you back in 1900 who it was. I could look that up.

Q. To whom did you report as your superior officer during your last period of service of the American Bell?

A. Hammond V. Hayes.

Q. What was his position in that organization?

A. He was in charge of what was called the Mechanical Department.

Q. The Mechanical Department?

A. It was the Technical Department at that time; that was in 1892 you are asking?

Q. No, I am asking about 1900, when you changed from one payroll to another?

A. It was the same. I can tell you I reported to him from 1892 to 1907.

Q. Then you reported to him both as your superior officer under the American Bell organization and under the A. T & T. organization?

A. After that change came in 1900, yes.

Q. Up to 1907?

A. That is right.

[fol. 8811] Q. Then until several years ago you knew of the existence of these two companies side by side?

A. I understand that The American Bell Telephone Company was not finally wound up until I think about that period.

Q. Then at this time, seven or eight years ago, the only property that you know of that the American Bell Company retained, that is these instruments, was transferred to the A. T. & T., and since that time those instruments have been the property of the A. T. & T. Company; is that correct?

A. The only thing I know is that up to a certain time, which I think was about that time as near as I recollect, the instruments were stamped "Property of The American Bell Telephone Company," and subsequent to that time "Property of The American Telephone & Telegraph Company."

Q. But you don't know whether that represents the true fact as to the ownership of those instruments or not?

A. I only know just what it said.

Q. During that period when The American Bell Tele-

phone Company was the apparent owner of these instruments the A. T. & T. Company was making the contracts with the licensee companies, was it?

A. I cannot tell you that.

Q. And received the 4½ per cent?

A. I never had anything to do with the contracts at all, as I told you. I have been connected just with the organization that furnished these services.

Q. Now how many of these licensee companies are there at the present time?

A. My recollection is that there are 25. There were 25, not including the Long Lines.

[fol. 8812] Q. Why do you say "not including the Long Lines"?

A. Because if I had included those there would have been 26.

Q. Why should you think of including the Long Lines?

A. They pay the 4½ per cent.

Q. Although they are not a separate company?

A. No, they are a separate organization.

Q. A separate organization in the form of a department of The American Telephone & Telegraph Company or something of that kind?

A. Yes.

Q. Then operating under the name of the Long Lines Department of The American Telephone & Telegraph Company?

A. Yes, that is right.

Q. Does The American Telephone & Telegraph Company make a contract with the Long Lines Department of The American Telephone & Telegraph Company?

A. I do not know that. I know they receive services and pay 4½ per cent.

Q. So far as that is concerned they are in exactly the same relation to The American Telephone & Telegraph Company as is The Ohio Bell Telephone Company?

A. I always regarded them such in our work. I cannot, as far as the legal matters go, you know, testify; I am not competent to testify on that, and I do not want to give the impression that I am talking about that, because I am not.

Q. So far as you are concerned, however, as the head of a Department of the General Staff of The American Telephone & Telegraph Company there is no distinction between the relations of the A. T. & T. Company and its Long Lines

[fol. 8813] Department and The Ohio Bell Telephone Company that you can observe in your day to day work as the head of that Department?

A. First of all, you have promoted me, because I am only the head of a part.

Q. All right, that shows how I am thinking about you?

A. Thank you, sir. In that relation there is of course this difference, that the Long Lines Department does not operate any local exchanges and so only obtains comparatively few instruments for its use, but other than that we regard them practically as though they were a separate company and as though they were an associate company.

Q. This Long Lines Department, where does it operate?

A. All over the United States.

Q. Does it have a single organization covering all of the United States or does it have local organizations in different states that are some how connected as an entire organization?

A. Well, it is my impression that there are local organizations, state companies.

Q. State companies that report to the Long Lines Department of the A. T. & T. Company?

A. I may not have this right, but it was my recollection that those were organized in connection with the acquiring of the right of way.

Q. So as to give a local status for the purpose of acquiring right of way?

A. So far as I have always understood it; I may be wrong about it; I do not know.

Q. But except for that local purpose—that legal purpose, they become a part of the Long Lines Department of the A. T. & T. Company?

A. I could not say as to that. You are again getting into [fol. 8814] legal matters that are outside of my knowledge.

Q. You seemed to know so much about this organization that we wanted to find out if you knew a little bit more.

A. I am willing to tell you all I do know, but I do not want to get beyond the things I do know about.

Q. Now these 25 companies, in addition to the Long Lines Department, are any of them operating, any two of them, any two or more of them, operating in the same territory?

A. No.

Q. Each one has its distinct part of the United States in which to operate?

A. That is my understanding.

Q. And all of them together cover the entire United States?

A. I think so. That is, Continental United States.

Q. Do they cover any territory outside of Continental United States?

A. Not as far as I know.

Q. Does the Company reach over into Canada, for instance?

A. There is another company in Canada.

Q. Is that a Bell Company?

A. It is called The Bell Telephone Company of Canada.

Q. Does it have similar license contract arrangements with The American Telephone & Telegraph Company?

A. Not similar, as I understand.

Q. Does it have any license contract arrangements?

A. It has some arrangement under which it obtains the services and it gets its instruments in Canada. The instruments it uses are manufactured in Canada.

[fol. 8815] Q. By whom?

A. I think by The Northern Electric Company it is called.

Q. Is that company controlled by The American Telephone & Telegraph Company by stock ownership?

A. The Bell Company of Canada?

Q. Yes.

A. No, I think not. It is my understanding that the American Company has a minority ownership there.

Q. All of these 25 companies are owned by The American Telephone & Telegraph Company, are they not?

A. No.

Q. Which of them are not?

A. I don't know that any of them are owned. It has an interest in all of them and there are some in which it has a minority interest.

Q. In which of these companies does it have a minority interest?

A. In the Cincinnati & Suburban Bell Telephone Company and The Southern New England Telephone Company.

Q. And in the other 23 it has a majority interest?

A. It has what I have understood is a majority interest, yes.

Q. Controlling interest?

A. I understand so, yes, sir.

Q. You understand that in The Ohio Bell Telephone Company it owns all of the stock excepting to qualify the directors of that company?

A. I only understand what I have heard since I have been out here. I have no other knowledge.

[fol. 8816] Q. You never heard that before?

(No reply.)

Q. Now with all of these 25 The American Telephone & Telegraph Company has a license contract similar, if not identical, with the contract which it has with The Ohio Bell Telephone Company, does it not?

A. I have not seen them all, but that is my understanding, that it is the same type. There may be minor exceptions, but it is my understanding in general that it is the same thing.

Q. You are familiar with the annual report of The American Telephone & Telegraph Company for 1923?

A. I read it through.

Q. You recall the statement on Page 6 of that report: "The associated telephone companies"—I understand by that term you refer to these 25 companies?

A. That is right.

Q. "In which your company is a stockholder, owning directly or indirectly all of the common stock of 14 companies, a majority in nine companies and a minority in two companies, The Southern New England Telephone Company and The Cincinnati & Suburban Bell Telephone Company"—that is the situation as you understand it, is it not?

A. Yes, if it is in the report it is so.

Q. Whatever is in the annual report is correct?

A. I think so.

Q. Are you familiar with the letter by President Thayer of The American Telephone & Telegraph Company, dated November 2nd, 1923, published in connection with the issue of $100,000,000.00 of debentures, in which he states: "The [fol. 8817] American Telephone & Telegraph Company is more than a holding company in the ordinary sense. It is the central organization of the Bell System"?

A. I don't know that I ever came across that letter before, no.

Q. But that is really the fact with reference to the rela-

tion of The American Telephone & Telegraph Company to these associated companies?

A. That it is the central organization?

Q. Yes.

A. In the sense in which Mr. Thayer used it and in which he has used it, it is so, yes.

Q. You are not familiar, I assume, with the details of the making of any of these contracts with the associated companies?

A. No, sir, that is out of my line.

Q. That is entirely out of your purview?

A. Yes, sir.

Q. Now this original voluntary organization of 1877, as I understood you to say, had no business excepting the licensing of other people to use the patents which it controlled and the facilities which it was able to furnish, is that correct?

A. I did not undertake to say that. I said that it was my understanding that that is at least part of what it did. Beyond that I do not know. The only thing I do know is this, that the furnishing of the instruments and the furnishing of the service to the companies operating around in the field of the present American Company and its predecessors, so far as I know, has been a continuous thing from the beginning of the business.

Q. When did the American Company, either the Ameri-[fol. 8818] can Bell or The American Telephone & Telegraph Company or any of its predecessors, first engage in the business of furnishing any sort of service, any sort of telephone service, as distinguished from making these license contracts?

A. You mean furnishing a commercial telephone service?

Q. A commercial telephone service, yes.

A. Well I don't know whether any of these early companies I mentioned back there in the first three years of the business did furnish themselves commercial telephone service or not. With that exception it was not until The American Telephone & Telegraph Company began operating the Long Lines.

Q. That was in 1885?

A. That is my understanding, it was in 1885, yes, sir.

Q. To engage in the business——

A. And furnishing the instruments and the service, as far as I know, yes.

Q. Did they organize any of these companies with which they made these license contracts?

A. I cannot tell you that, sir. I do not know.

Q. You don't know whether they went out and organized the companies or found people willing to engage in the business and licensed them?

A. It was my understanding that they would undertake to interest people that had money to start companies and take out licenses and start in the telephone business, and they issued licenses to these people when they found them.

Q. When they found them and made these contracts with them originally they would have no interest in the business [fol. 8819] except this license contract?

A. It has always been my understanding that these contracts were made at arms length in the beginning, yes.

Q. When did the central company first begin to acquire interest in these subsidiary companies?

A. Oh, that was away back in the early days.

Q. What do you mean by "the early days"?

A. Away back at the time the licenses were granted.

Q. From the very beginning then they had an interest——

A. They had some interest in many of them. I don't know whether that was in all or not.

Q. But that policy has continued as the policy of the central company down to the present time until we have the situation that is set forth in the 1923 report?

A. It is the fact that the situation is as set forth there, yes.

Q. And as I say that has always been the policy of the company, to acquire immediately and own these interests in that way?

A. It has had these ownerships. I can not discuss the policy because I have not been connected with it. I simply know what has gone on in some cases.

Q. So far as you know that has been the continuous procedure all the time?

A. So far as I know there has been some interest in these companies. That is as far as I can go.

Q. When did you first see any independent movement in the telephone business outside of the Bell organization?

A. Why, it came about, I should say, in general terms, at [fol. 8820] the time that the original Bell patents on the instruments expired.

Q. Which was about what time?

A. It was about 1893 or '4.

Q. 1893 or '4?

A. I should say so, yes.

Q. At that time other people commenced to organize companies independent of the Bell Company?

A. I think that is right.

Q. That was the beginning of the Bell movement—of the independent movement, I should say?

A. I should say so.

Q. And the Bell Company met that competition as best it could, I suppose, and acquired those independent companies as it could?

A. Well, I don't know about that, I know that we continued, the associated companies continued to give telephone service and to try to meet the demands of the public; any acquiring of companies was done, as I understand, by these associated companies around in the field.

Q. What did the Bell Company have to do with acquiring these independent companies?

A. That is beyond me. I wasn't in that end of the game at all.

Q. Now, as I understand, the telephone industry as developed by The American Telephone & Telegraph Company and its predecessors—I wonder if this would be a fair statement? I am reading again from the 1923 report.

A. What page is that on?

Q. Page 7, the second paragraph on that page: "By [fol. 8821] virtue of stock ownership and contracts and relations which grow out of them, the Bell System operates practically as a single organization, offering telephone service to the people of this country without limitation of distance or property ownership. By its leadership in the art of telephony all that science and invention have made possible are available for use throughout the Bell System." Is that the situation in the telephone industry as you understand?

A. Yes, as I understand those words, it is.

Q. Along about page 201 you refer to an article in the 1920 edition of the Encyclopedia Americana?

A. Yes, that is it.

Q. You say, "In cooperation with another member of our committee"——

A. I should not have said "committee".

Q. That is what the transcript shows?

A. That is wrong. That is not committee. It is with another member of our company, our organization.

Q. There was no reference to a committee and I wondered what that meant.

A. It was the man who was then acting as our chief engineer.

Q. Who is that?

A. Mr. Gharardi. His father was a Rear Admiral in the United States Navy.

Q. Now, as I understand your statement in your direct testimony, the General Staff has been in existence from the time, as you interpret the situation, when Dr. Bell and Mr. Watson worked together in the original development of their ideas?

A. Yes, sir.

Q. The Bell idea?

A. Yes, sir.

[fol. 8822] Q. The organization has been continuous in some form down to the present time?

A. That is my understanding, yes.

Q. The present organization is a direct result or development of that original start?

A. Yes, it has been a continued growth. I do not mean by that that it has always every year been bigger than it was the year before, because there have been changes, but there have been technical departments and the technical departments of this central organization have been furnishing these services to the associated companies from the beginning.

Q. And down to 1885 that General Staff and the organization that had to do with the making of these contracts and collecting the license fees was all there was to the central organization; is that correct?

A. I could not say as to that.

Q. It was not conducting any other business, was it?

A. I do not know. I might say something that was not so if I answered that. I do not know. I just do not know.

Q. But it did not go into the business of commercial telephony until 1885?

A. That is my understanding, that that is when the Long Lines Department started to build and operate the Long Lines, connecting the territories of the associated companies; that is, the first line, long line as we term it, was

the line from Boston to New York, and I think that was put into operation in 1884, and it was just about that time that there was this Long Lines organization created for that purpose.

[fol. 8823] Q. And prior to that time the telephone business had been a purely local business conducted by these various licensee companies scattered over the country?

A. So far as I know there had been no means of connecting the territories together.

Q. Now since 1885 there has been a gradual development on Long Lines business which The American Bell Telephone Company has operated down to the time when it was taken over by the A. T. & T. Company; is that correct?

A. No, I do not understand it that way. Those Long Lines have been operated by The American Telephone & Telegraph Company from that period, about 1884 or '5, right down to the present time.

Q. Then The American Telephone & Telegraph Company was first organized to conduct the Long Lines business?

A. Yes, sir, that is my understanding.

Q. As a separate company for that specific purpose?

A. That is my understanding.

Q. And the instrument service was left with The American Bell Telephone Company, and The American Telephone & Telegraph Company originally had nothing to do with that; is that correct?

A. That is my understanding. Before that time and after that time The American Bell Company was providing the instruments and the services because during that time up to 1900 I was on the payroll of The American Bell Telephone Company and I was engaged in the work of furnishing these services.

Q. Then up to 1900 the A. T. & T. Company was a Long [fol. 8824] Lines Company conducting the commercial telephone business and having nothing to do with the licensee contracts or furnishing these services to the associated companies?

A. I cannot say definitely as to that, but the part with which I came in contact indicated that that was so.

Q. That is your best information?

A. That is my best information, yes, sir.

Q. And along side of that company was this American Bell Company which continued to furnish these services——

A. They were both in existence. There is no doubt about that.

Q. And each had its separate function, the one in the commercial telephony, the Long Lines business, and the other in the business of furnishing these services under the licensee contract?

A. As I saw it, that was the case at the time, yes.

Q. And there was no doubt a contract between The American Bell Company and The American Telephone & Telegraph Company which covered these services just the same as did the written contract with the associated companies in the local field, wasn't there?

A. I do not know about that.

Q. You think not?

A. I do not know whether there was or was not.

Q. You mean you do not know whether there was the same sort of contract or you do not know whether there was any contract?

A. You mean in regard to furnishing the services?

Q. Yes.

A. So far as I know, the payment by the Long Lines [fol. 8825] for services is of comparatively recent origin.

Q. How recent?

A. Perhaps six or eight years ago.

Q. Then originally they did not pay for services or for the use of instruments to The American Bell Company?

A. Well, I do not know as to that either, but I do not think they did.

Q. Do you know what arrangement was made between the two companies for the use of instruments?

A. No, I do not.

Q. Did The American Telephone & Telegraph Company furnish its own instruments during that period?

A. Why, I could not say. They never used very many. All they used in the Long Distance services were comparatively few, for operators and test men. Just what arrangement they had for them I do not know.

Q. The original arrangement, the original licensee contract, covered only the instrument service, did it not?

A. Well, I could not say.

Q. Didn't you testify in chief that the original contract merely covered the instrument services?

A. No, I did not undertake to do that. I know that the

services have been furnished and the instruments continuously from the beginning of the business, but as to what was said in the contracts I do not know. I am not familiar with the language of the contracts.

Q. Then you don't know of any contract similar to the [fol. 8826] license contract between these two companies before 1900?

A. No, sir.

Q. Since 1900 the A. T. & T. Company has had entire charge of this licensee contract service excepting that The American Bell Company apparently owned the instruments?

A. I think that is right, yes. That is, they were marked property of that company, and the people who were performing these services, of whom I was one, went on the payroll of The American Telephone & Telegraph Company.

Q. When you went on the payroll of the A. T. & T. Company in 1900, then the A. T. & T. Company had the Long Lines pretty well developed, the country pretty well covered with Long Lines at that time, I assume?

A. No, not in 1900, I wouldn't say it was pretty well covered. You see we had not talked to Denver by that time. As I remember it, we were talking from New York and Boston at that time and to St. Louis and Omaha.

Q. And that organization, that is, the same organization, The American Telephone & Telegraph Company, conducted the commercial business, the Long Lines business, so far as it had been developed, with the licensee service to the associated companies?

A. That is, those were all functions of The American Telephone & Telegraph Company after the year 1900?

Q. Yes, after the year 1900?

A. Yes.

Q. Was The American Telephone & Telegraph Company engaged in any local exchange business at any time during its life that you know of?

A. Why, at one time they operated one little exchange [fol. 8827] down South for awhile. I do not know just why, but with that one exception I should say that they operated no local exchange business.

Q. And the original development of the Long Lines business had the effect of connecting the various local exchanges

of the licensee companies, the associated companies, as they had been developed up to that time?

A. Yes, subject to the limitations of the developments of the art of telephony. As we have extended that we have made it possible to talk from one part of the country to practically every other part. But that was a long time coming.

Q. But the fact is at that time the art had developed to the point, and the demand for service had developed to the point where it was considered wise to connect these various companies by these Long Lines so as to make a unit for telephone service between the different parts of the country?

A. As to the reasons, I cannot say; but what was done was to make it possible as fast as we were able to extend the limits of telephony to make it available to people all over the country to talk as far as possible.

Q. I asked you about the effect of it.

A. Yes, that was the effect.

Q. So that between the licensee contracts which had been made and the Long Lines development which was made at that time, the business was unified in that way, amalgamated into one unit by the combined effect of the licensee contracts and the Long Lines?

A. I should say it was made a unit more by the physical things that enabled that to be accomplished, by having [fol. 8828] standard apparatus and standardized operating methods and the improvements in loading and repeaters, with all of those physical things together it became possible to accomplish this result.

Q. That condition having been reached the company took the step of putting together the units of these Long Lines?

A. I do not know what you mean by that. I have been, as I say, considering the physical things concerned with accomplishing these things, but now as to any corporate relations or contracts I do not know.

Q. I am not asking about any corporate relations or contracts. The effect of building these Long Lines and connecting the local companies was to bring them all into one system, so far as they were connected?

A. Why, yes, if you understand that the way I do. It means, as Mr. Thayer stated in this last annual report, that the Bell System operates practically as a single opera-

tion. That has been the result accomplished by these physical accomplishments.

Q. By these physical accomplishments combined with the tying together by the license contracts and the Long Lines?

A. Well, as I say, I cannot very well discuss it from the contract end, but I should say that that was what the accomplishment had done.

Q. That is what has come about?

A. That is what has come about.

Q. Yes. Has it been the practice of the A. T. & T. Company, in conducting its Long Lines business, to construct its own lines?

A. Generally so.

[fol. 8829] Q. Well, in the Long Lines business, the transmission line is the main part of the physical plant, is it not? The Long Lines Department uses local exchanges for its connections?

A. Yes; it does not own those. Its principal property is in pole lines and wire and, to some extent, in cable.

Q. Those it constructs itself or has its own engineering department?

A. Yes, sir.

Q. Its own construction department for that purpose?

A. Yes, that is right. Of course there are exceptions to all that, where there will be property built and owned jointly with the associated companies, in some cases.

Q. And in some cases it uses the property of the associated companies, does it not?

A. Under some sort of a rental contract.

Q. Under some sort of a rental contract?

A. Yes, that is right.

Q. Now this construction work, and the designing and laying out of plant, is that part of the work of the General Staff?

A. You mean now this work on the Long Lines?

Q. Yes.

A. No. No, that has been carried by a separate organization.

Q. That is a separate engineering department?

A. Yes, they have—I can tell you in just a moment. I cannot lay my hands on it right now, but they have an engineering department of something like 150 or 60 people entirely on the Long Lines work.

Q. Where are they located? Where are the head-
[fol. 8830] quarters?

A. In New York.

Q. Connected in any way with the General Staff Headquarters?

A. Nothing except being within the same building walls.

Q. Entirely a separate organization?

A. Yes, sir.

Q. You are no part of that organization?

A. No.

Q. And have not been?

A. No.

Q. When you say that you render service to the Long Lines Department just the same as you do to associated companies it is this engineering department that you have your relations with so far as they concern engineering questions, is that correct?

A. In the same way that we do with the engineering departments of these associated companies.

Q. And just exactly the same relations?

A. That is right.

Q. But you do not know anything about the contract under which that may be done?

A. No, sir.

Q. Or the arrangement existing?

A. No, sir.

Q. Do you know anything about the way in which the accounts are kept between those two different departments?

A. I cannot tell you that. I do not have any occasion to follow the accounts.

Q. Now you produce here as, I think, your Exhibit 1—no, your Exhibit 2—the picture of the original Bell instrument. That technically is only a transmitter, is it not?

A. Both transmitter and receiver.

Q. It is both transmitter and receiver?

[fol. 8831] A. That is, when they were using those early instruments they had to put the instrument to the mouth to speak into and then to transfer it to the ear to listen.

Q. But it has the characteristics of a transmitter more completely that it has those of a receiver as the art has been developed?

A. No, I should put it the other way around; it has more electrically the characteristics of the receiver.

Q. That is, the original instrument and the one which is generally considered to be the foundation technically and mechanically of the telephone business, is it?

A. Yes, sir; except, you understand, that was a reproduction of it; it was not the original.

Q. I understand.

A. But that was the type of the first instrument.

Q. That was the form of it?

A. Yes, sir.

Q. That is the device that was established as the Bell invention and became the foundation of the industry?

A. That is right.

Q. Well, now, that has been improved and added to, worked out, until we have the instruments that are used at the present day, and, as I understand it, your claim is that that development has been practically entirely by the Bell organization; is that your general position?

A. That is right.

Q. Who was working in the direction of the transmission of speech at about the same time that Dr. Bell produced that instrument?

A. Why, there were a great many other people who were [fol. 8832] working in that direction, and the original patents, as you know, were subject to protracted litigation. I think there were something like several hundred complainants. But the Supreme Court of the United States, as I understand, finally decided in favor of Dr. Bell. There were many, many people who were working at that time or who claimed to have been working at that time.

Q. You have produced here a list of how many patents now in existence?

A. Those figures which I gave you were as of January 1st, 1924, and it covered a list of 4768.

Q. 4768?

A. That is, that was the number as of that date. Is that the date of the list that I gave you? I think it was. If you have the exhibit there it is marked.

Q. I do not happen to have the exhibit.

A. I think that is right though, I think it was January 1st.

Q. Then the number—I cannot find it right now—that

represents all of the patents, does it not, that are controlled by the Bell Company in existence or in effect at the present time?

A. That is right, except, in order that there may be no misunderstanding, that total number includes patents owned or controlled or under which license is held.

Q. Here on page 216 the statement is "As of January 1st, 1924, the American Company owned or controlled or held the license under 4678".

A. It should be 4768.

Q. And there were 2742 applications pending?

[fol. 8833] A. That is right.

Q. Are all of those patents in use in telephone apparatus at the present time?

A. No, sir.

Q. How many of them are; what of them are? Let us point out the ones that are in use.

A. I took that up some time ago with our General Patent Attorney and he told me this, that whereas we can regard it in a sense that they are all in use, that there are about 8 or 900 of them which cover definitely apparatus which is in actual use by the associated companies.

Q. What is the value of the remaining 4,000 or approximately 4,000?

A. A large group of them cover matters as to which we may wish to follow development work in the future and there are some that have been acquired in connection with development work in the past along lines that it has proved wise to turn away from, at least for the time, and sometimes the art takes a turn where those are used. But they were all acquired or taken out in order to protect our development work.

Q. Now what was the number you said were in actual use?

A. Somewhere I should say, from what I gather from talking with our Patent Attorney, between 8 and 900 that are in actual service.

Q. You have no information on that?

A. No; I can give you a list of a hundred of them that are in common use.

Q. Will you give us a list of the patents included in this list which are in use in the State of Ohio in local [fol. 8834] exchanges?

A. I don't know. That would mean a tremendous piece of work to do that. I don't know that anybody could do that short of going around the State and looking at each piece of apparatus and determining the patent mark on it, and the same thing for circuits that are in use. That would keep somebody busy for an awfully long while.

Mr. Gentsch: We object to that statement and ask that it be stricken from the record, because it is purely a conclusion and apparently he don't know—"being a tremendous job"; it may or may not be; evidently this witness don't know. It ought not to be in a record as affirmative evidence.

The Witness: I know to this extent, that I should not want to undertake it without having a good deal of time.

Mr. Gentsch: We object to this statement also.

Mr. Burr: The statement is perfectly proper. The witness certainly knows whether it would take a long time.

Commissioner Poor: I think it is a perfectly proper question.

Mr. Gentsch: If you read that again, with the answer, you will see it is not responsive to the question at all, but it is purely extraneous matter. It is on that ground that I am asking that it be stricken out.

(Question read.)

The Witness: Now, in answering that question——

Mr. Gentsch: Never mind. You are not here to answer the question——

(Question and answer read.)

[fol. 8835] Mr. Gentsch: I am objecting to the indirect way in which the testimony infers that it would take a long while, without his knowledge. That is not the question that was asked. The question was, Could he furnish it? I ask that that be stricken out.

Mr. Burr: As I understand, he is giving his reasons for not giving the testimony.

Commissioner Poor: I think he has a right to explain in a matter of that kind.

Mr. Gentsch: Note an exception.

Commissioner Poor: The motion is overruled.

Mr. Gentsch: Note an exception.

Q. You can give us a list of about a hundred patents that are in common use in the telephone business?

A. Yes, sir.

Q. Will you do that?

A. Yes, sir.

Q. All right. Have you that exhibit here? I haven't a copy of it.

A. I have just one copy of it—oh, you mean this list of patents?

Q. Yes.

A. No, I haven't.

Q. Will you give the list of the hundred or so you can point out that are in use in the telephone business?

A. Would you like me to give it now? I can send you a copy of it or give it to you in another form.

Q. We would like to put it in the record if you can do it now. Now is the time.

A. This would be the agreeable way to do it. I can show you what I have here now.

(Conference between counsel and witness.)

[fol. 8836] Q. You are not able, Mr. Rhodes, as I understand from your own statement, to state that any particular one of these 4768 patents is used in any exchange in the State of Ohio?

A. Not in the sense that I have actually seen that apparatus in the exchange bearing those patent marks, but I am perfectly certain that there are some of these patents that are in use in the State of Ohio, yes.

Q. Are you prepared to state that any one of them or any of them was ever used, pointing them out and naming them to us?

A. Yes, I can do that, because, for instance, some of them cover instruments. I know there are instruments in use in the State of Ohio.

Q. Do you know that there are instruments in use in the State of Ohio embodying those patent features? That is what I want to get at. The evidence would be of no avail unless they are actually used here.

A. They are the types of instruments that are in general use today, and I would be very much surprised if they were not used here.

Q. You do not know that?

A. I would not say that I do not know. You take our repeater circuits, take our central office; these must be in use in the State of Ohio. Patents covering loading coils I know are in use in the State of Ohio. They cover models of the type in use in Cleveland. Now, for instance, there are patents here covering this 144 type of telephone receiver, the latest form of telephone receiver. I know those are used in the State of Ohio.

Q. That is the latest form of the telephone receiver, the [fol. 8837] No. 144?

A. Yes.

Q. Under what patent is that held?

A. Two patents belong to that, No. 1062082 and No. 1063237. Now those both cover the 144 type of receiver.

Q. Specifically what do they cover in that receiver?

A. One of them covers the permanent magnetic steel bar and the soft iron pole piece welded thereto. Another one covers a permanent magnetic steel bar with soft iron pole pieces welded thereto and the cup clamp between them. That is just a broad summary of the patent.

Q. What is the date of that patent?

A. The first one is May 20, 1913, and the second one is June 3, 1913.

Q. Who was the inventor?

A. One is E. B. Kraft and J. N. Reynolds, and the second V. Anderson.

Q. Who are these inventors?

A. I think that they are employes of The Western Electric Company, but both patents are owned by The A. T. & T. Company.

Q. Has there ever been any litigation in reference to those patents?

A. I would not know whether there was or not.

Q. Are there any others that you recall which are in use in the State of Ohio?

A. Well, there is one here applying to quadded cable. I know there is quadded cable in the State of Ohio and this patent must be in use in connection with it.

Q. Where is there any quadded cable?

A. It is used generally for bringing the toll lines into ex- [fol. 8838] changes.

Q. That is not an exchange equipment, is it, though?

A. Well, it is within the exchange frame.

Q. But it is toll line equipment?

A. It is primarily for toll line purposes.

Q. What is the patent you refer to on that?

A. Here is the one, 1064433. Method of reducing telephonic disturbance.

Q. Whose invention?

A. O. B. Blackwell and G. A. Anderegg.

Q. What is the date?

A. June 10, 1913.

Q. Who are those inventors?

A. O. B. Blackwell is transmission development engineer on the American General Staff. Mr. Anderegg is an employe of The Western Electric Company.

Q. Those were issued to those two men jointly, were they?

A. Jointly, that patent was, yes. That also is owned by The American Telephone & Telegraph Company.

Mr. Gentsch: Now we object to Mr. Burr standing up there prompting the witness.

Mr. Burr: If counsel wants to know, I simply said that he had not told the ownership of the patent.

Mr. Gentsch: I object to the prompting of the witness by Mr. Burr. It is not the first time it has happened.

Mr. Burr: I supposed you wanted the truth and the whole truth.

Mr. Gentsch: We will get the truth without you prompt-
[fol. 8839] ing the witness, and we are objecting to that.

Q. Was there another quadded cable patent you referred to? I thought you spoke about more than one?

A. Why, there are, yes.

Q. That are in use in the State of Ohio?

A. I firmly believe so. I cannot say that I have seen the cable with these methods employed but I firmly believe that it is.

Q. How did The American Telephone & Telegraph Company acquire this patent that you have just referred to?

A. Why, it acquired Mr. Blackwell's share of it because he was an employe of the Staff.

Q. Yes.

A. And I don't know in the case of Mr. Anderegg's share. I think there is an arrangement with The Western Electric Company that a certain kind of patents that affect absolutely speech transmission become the property of the American Company.

Q. Are there any others there that you know that are in use in the State of Ohio?

A. Here are some on loading. I know that loading coils are used in exchange circuits in places like Cleveland, in trunks between the offices in the city, and there are some here that cover recent improvements.

Q. What are they?

A. Well, here are four covering type of magneto core that employs the powdered dust. You remember I showed you on direct examination the cores or coils built up out of rings that could be broken. There is a group of four patents covering those. They are 1274952, 1286965, 129-
[fol. 8840] 2206, 1297126.

Those are owned by the American Company.

Q. Who are the inventors?

A. J. B. Speed, G. W. Elman, J. C. Woodruff; and G. W. Elman in the fourth.

Q. Who are they?

A. I think they are employes of The Western Electric Company.

And thereupon the further hearing of this matter was adjourned to Tuesday Morning, April 22nd, 1924, at ten o'clock.

[fol. 8841] Tuesday Morning Session

April 22nd, 1924.

And also FREDERICK L. RHODES, resuming the stand, for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

Present:

Same counsel as at previous session, and J. E. Kinnison, counsel for the City of Canton, Ohio.

Commissioner Poor: Gentlemen, we will resume.

Q. Mr. Rhodes, when we recessed yesterday, you were telling us something about patents. Have you that sheet before you?

A. Shall I continue?

Q. Yes. Now, what was the patent you were just testifying about? Were you through with that?

A. You had asked me as I remember it to name some of the patents which were used.

(Record read.)

Q. Now, can you name any other patents in your list which was filed here as an exhibit which cover devices or apparatus that are in common use in the State of Ohio?

A. Yes, sir.

Q. Go ahead. Now, will you do this, to save time, give [fol. 8842] the number of the patent, the date and the inventor and his connections and what the patent covered.

A. I will next give two patents which cover improvements in transmission and signalling, which are used in Number 550 type of private branch exchange and in other types of private branch exchanges. One of these is 1175112. The patentee is H. M. Bascom. He is a member of the General Staff of the American Company. The date is March 14, 1916. The other patent is 1232507, patentee H. L. Darrah. The date of that patent is July 10, 1917. Mr. Derrah is an employee of the Western Electric Company I believe.

Q. Now, those are two related patents, are they? You speak of them together?

A. Yes, sir.

Q. Because they are related?

A. Yes.

Q. What is the particular function of the devise they cover?

A. They cover the transmission and signalling systems employed in this particular type of private branch exchange.

Q. Private branch exchange?

A. Yes.

Q. And that apparatus is manufactured by the Western Electric Company I assume?

A. Yes.

Q. Did you give the dates?

A. Yes.

Mr. Burr: May it be understood that unless the witness otherwise states that these patents are all owned by the American Company?

The Witness: The first is owned by the American Company and the second is owned by the Western Electric Company.

[fol. 8843] Mr. Burr: It would be my suggestion that he differentiate in each case.

The Witness: I will do that.

Q. Was Mr. Bascom a member of the General Staff at the time of that invention?

A. Why, I cannot state from memory.

Q. How long has he been connected with the General Staff?

A. Well, if I knew that, I could tell. But I don't remember accurately. He came to us from the—I think from the New York Telephone Company. Now just as to when that date was, I don't remember.

Q. All right. Now is that a device that is used in practically all of the private branch exchange installations?

A. In all of that particular type, the 550.

Q. What is that type generally?

A. It is one of the standard types, I can't tell you where it could be used in this territory, but if is a type in common use.

Q. All right, what is the next?

A. 1231629, H. H. Lowrey, July 3, 1917, owned by the Western Electric Company, and it covers a switchboard section constructed in two parts and is used in all number 1-D switchboards.

Q. What is a number 1-D switchboard?

A. It is a type of smaller size and special form of the Number 1 common battery switchboard.

Q. In common use?

A. Oh, yes.

Q. Now, who was this inventor?

A. H. H. Lowrey.

Q. What is his connection?

A. Why, I can't state accurately, but I presume he was [fol. 8844] with the Western Electric Company.

Q. Not with the general Staff?

A. I think not. You know that many of these specific patents are owned by the Western Electric Company and controlled through our patent relations with the Western Electric Company.

Q. What are your patent relations with the Western Electric Company?

A. Well, now, I will have to describe that at no little length. The Western Electric Company is granted by the

American Company exclusive right to make and sell appliances other than telephones under patents owned and controlled by the American Company. The Western Electric Company pays all costs of such patents and assumes all royalties and obligations, and also agrees to sell to the associated company at prices that are not exorbitant or unreasonable and that are uniform to all associated companies.

Now, the American Company grants to the associated companies the right to use appliance patents which the American Company can so license, and that includes these patents of the Western Electric Company.

Q. You are reading from something there are you?

A. I am reading from some manuscript notes of my own.

Q. Does that purport to quote a contract—or is that——

A. It is an abstract of an old contract.

Q. Of a contract now in force?

A. I believe so.

Q. Will you produce that contract?

A. No, I haven't it.

[fol. 8845] Q. It can be produced?

A. I presume it can.

Q. Will you get a copy of it for the record?

A. I will do the best I can.

Q. What do you mean by that?

A. I will go back and report to my superior officers, that I have been asked for it.

Q. All right, now, what is the next patent that you have in mind that is in common use in the State of Ohio to your knowledge?

A. There is one covering a telephone service observing system, Number 1245490, patentee, Mr. E. C. Molinna, who has been for many years a member of the General Staff of the American Company. The patent is owned by the American Company and the date is November 6th 1917.

Q. What is the use of that device?

A. It covers circuit arrangements involving a means of service observing of a plurality of lines, in which the lines are connected automatically to a service observing trunk, one line at a time, excluding all the others. The purpose of it is for use by the traffic department of an associated company to make the necessary observations to keep informed as to the grade of service that is being furnished.

Q. Is it a device under this patent that is in common use in the exchanges for that purpose?

A. Yes.

Q. What is the next?

A. Number——

Q. Just a moment?

A. Yes.

Q. Is this a specific device that is manufactured by the Western Electric Company?

A. It is involved in apparatus made by the Western [fol. 8846] Electric Company, yes.

Q. All right?

A. Now, I have another one—Pardon me. I won't give this. It soon expires, in a few months. There is a patent on a switch key, Number 1012125, patentee, Mr. E. B. Craft, for many years connected with the Western Electric Company, now their chief engineer, dated December, 19, 1911, owned by the Western Electric Company. This patent covers the standard method of mounting the contact spring on the frames of keys. It covers means for securing the springs together as a unit, and independent means for attaching the units to a rib supported between the two legs of the frame. It is the type of construction which is used on practically every type of key unit.

Q. And is embodied in devices manufactured by the Western Electric Company?

A. Yes. Now, I have one on a key shelf and base, Number 1050520. The patentee is E. B. Craft, the same as in the previous patent. The date is January 14th, 1913. The patent is owned by the Western Electric Company and it covers the Western Electric Company's universal type mounting for keys in a key shelf and has claims covering a shelf, having an opening therein, a key base supported therein by means which leaves an unobstructed opening therein, and locking means carried by the key base. It is the standard mounting for all universal type keys manufactured by the Western Electric Company.

Another patent on the subject of a flexible conductor, Number 1116090, patentee D. T. May. As far as I know, he [fol. 8847] is an employee of the Western Electric Company. The date is November 3rd, 1914. The patent is owned by the Western Electric Company and covers the construction of all switchboard cords manufactured by the Western Electric Company since 1914.

In another one the subject is an electro-magnetic relay. The number is 1156671. The patentee is E. B. Craft. The date is October 12, 1915. The patent is owned by the Western Electric Company. It covers a relay in which the armature is supported at one end of an electro-magnet core and swings laterally toward and from the other end of the cord. Contact springs are mounted at the rear end of the core and are controlled by the armature. That patent covers all relays of what is known as the flat core type, manufactured by the Western Electric Company.

Q. And they are used in long distance lines generally in the State of Ohio?

A. They are used in local switchboards.

Q. What is the purpose of that relay?

A. To open and close contacts. There are a great many contacts involved in the operation of the switchboard. As, for instance, when the subscriber removes his telephone from the hook, there is a relay which operates to close a contact and light a lamp, and when the operator inserts the answering plug in the answering jack another relay operates to extinguish the line lamp. Those relays for a number of years have been of this improved and more economical [fol. 8848] type.

Q. This Craft is the same man you mentioned a while ago?

A. The same one, I can go on with a large number more of these.

Q. Let's have a few more?

A. There is a telephone pay station patent, Number 917742, patentee, G. A. Long. And I don't know who he works for, or did. The date is April 6th, 1909, and the Western Electric Company holds a license under this patent. It covers a resonant circuit, which transmits the tone from a gong to a transmitter through a metallic medium and thence to the operator. It is used in the Number 50 coin collector.

Q. Is that Number 50 the one that is in common use at the present time?

A. It is the multi coin pre-payment type of coin collector, very generally used, yes. Now, I have several more on this coin collector. Number 1043219, patentee, O. F. Forsberg. The date is November 5, 1912. The patent is owned by the Western Electric Company. It covers the trap mechanism used in the Number 50 pre-payment coin collector, which holds the coin in suspense until the call is completed, and then distributes it to the proper chute.

Another patent on the same inventor, Number 1117485, November 17th, 1914, owned by the Western Electric Company, covers the magnet mechanism which operates the trap mechanism used in the Number 50 prepayment coin collector.

A patent on a telephone transmitter, Number 1050304, patentee C. E. Scribner, connected with the Western Electric [fol. 8849] Company, date January 14th, 1913. The patent is owned by the American Company. and it covers the centrally damped structure which is now employed in the Number 323 type of transmitter.

Q. Is that Number 323 type one that is commonly used?

A. It is in wide use now.

Q. Well, is it the current one that is being used at this time?

A. Yes.

Q. Is Mr. Scribner the chief engineer of the Western Electric?

A. He was until he retired. The 323 instrument came into general use about 1918. About two years subsequent to that time there began to come into use the 337 type of transmitter, especially adapted for long common battery substation loops, which employs a button of special design. That was covered by patent Number 1132613. The patentee is J. C. R. Palmer. The date is March 23rd, 1915, and the patent is owned by the American Company.

Q. Who is Mr. Palmer?

A. I don't know definitely. I think he was an employee of the Western Electric Company.

Q. That device is one that is manufactured by the Western Electric Company?

A. For the American Company, yes. Now there is a protector patent Number 1222350, Patentee H. G. Bandfield. The date is April 10, 1917. Owned by the Western Electric Company. It covers the new porcelain type protector block which is now standard in the bell system.

Q. What is a protector block?

A. It is a device used at the subscriber's station, the [fol. 8850] purpose being when a foreign current, an electric light or power current, suddenly gets on the telephone line, to operate by arcing the ground and protecting the subscriber's premises and the telephone instruments there. It also functions in the event of lightning discharges.

Now there is another patent covering the specific forms of these protector blocks. They are known as the Number 26, 27, 28 and 29 types. That patent is 1324334. The patentee is H. Boring. I presume he is an employee of the Western Electric Company, but I am not certain. The date is December 9th, 1919. And it is owned by the Western Electric Company.

Now, I have a long list of numbers only of patents applying to switchboard apparatus and switchboard circuits. My information on this is not as complete as the information that I have just given you, but broadly speaking these cover types of switchboards which are known as the Number 1——

Q. Now, Mr. Rhodes, if you are not able to give us who was the inventor and who owns the different devices and what they are used for in the detail you have given us about the others, we do not care for them.

A. I can only give you a long list of numbers of these patents without the other information.

Q. That would not be very intelligible to us outsiders I am afraid. Are those that you have named the ones you have in your mind as the patents in the most common use in the [fol. 8851] State of Ohio?

A. They are representative of the others only.

Q. They are representative, yes.

A. It is not by any means a complete list, and I did not anticipate that you would want that information and I did not come prepared to give it. But if you wish something on that, a long list can be prepared giving this information you wish in detail on these patents.

Q. I want to refer to your testimony on page 212. On page 214, I should say, where you refer to the practice of the A. T. & T. Company of granting to other people the privilege of making use of the inventions which you have set forth in your list, and you have named one or two typical instances of where that practice has been followed. Now what is the practice of the company with reference to the permission of other companies to use telephonic devices that are covered by patents? The ones that you named were not strictly speaking telephone devices as I recall?

A. No. Why, in some cases, licenses have been granted. I remember that a number of years ago an arrangement was made with the automatic electric company in Chicago, whereby they were granted the right to use such of the

American Company's patents as pertained to the system of machine switching, known as the step by step method, which they were then using, and they granted to the American Company the right to use all of their patents involved in machine switching.

Q. Was that in settlement of patent litigation?

[fol. 8852] A. I couldn't tell you that.

Q. Does that company manufacture any equipment for the American Associated Companies?

A. Yes, a large amount.

Q. A large amount of automatic equipment?

A. Yes.

Q. Practically all of the automatic equipment used in the system is manufactured by that company at this time?

A. No, just the machine switching apparatus of that particular type.

Q. What particular type?

A. Known as the step by step.

Q. What other type is used?

A. The panel machine switching type.

Q. Isn't the use of the panel switching type rather exceptional in your system?

A. No, it is going in very rapidly in many places.

Q. In how many places in the State of Ohio is the panel switching being used?

A. I don't think it is being used anywhere in Ohio.

Q. No, nowhere in Ohio. Now does the automatic company manufacture automatic equipment under your patents, machine switching equipment, for the general public?

A. Why, it manufactures this same type of equipment for the general public.

Q. Under your patents?

A. I presume so, because some of the machine switching patents that we have rights under are fundamental.

Q. Are there any other instances of that kind that you [fol. 8853] have in mind? I think you have answered the question.

A. Very well. No, there are no others that I have in mind, although I would not undertake to say that there are no others.

Q. What is the Western Electric Company? What is its function in the American Telephone and Telegraph system?

A. It has two main functions. One, as a manufacturer

of telephone apparatus, and the other as a purchasing agent and distributor of supplies for the associated companies.

Q. As a manufacturer, does it sell its product to others than the associated companies?

A. Very largely, yes.

Q. And as a purchasing agent does it purchase materials and pass them on to others than the associated companies?

A. Well, I don't know as to that. They do a large business in electrical supplies outside of the Bell system.

Q. Well, does that electrical supplies cover articles that they do not manufacture?

A. Oh, yes.

Q. But purchase from other manufacturers?

A. Yes, very largely, as is the case in their purchasing and warehousing work for the associated companies.

Q. Do they also maintain and operate an engineering department, research and development department?

A. The Bell System laboratories so-called are in the building of the Western Electric Company and the relation between that department and the General Staff is a very close relation, yes, sir.

[fol. 8854] Q. Now, in the work of that laboratory who has the direction as to what work shall be done and what result shall be sought?

A. In the portion of that work applying to the Bell system, the direction as to what is done rests with General Carty who is vice-president of the American Company in charge of development and research.

Q. Is there a part of the Western Electric laboratory that does not relate to the Bell system?

A. Yes, they do work on things that are not included in that.

Q. What products?

A. Washing machines, vacuum cleaners.

Q. That is the general electrical appliance business which you referred to a while ago which has no relation to the telephone business?

A. That is part of it.

Q. This covers facilities for development of that sort of thing as well as the telephone industry.

A. Yes, they do something of that on their own hook that the Staff is not interested in.

Q. What is the magnitude of the engineering laboratory

of the Western Electric Company? How many men do they employ in that department?

A. Why, I should say their total employees run something over three thousand. They are not all engineers, but that is the total force.

Q. You would distinguish in that force between engineers of varying grades and clerks and assistants and all that sort of thing, as you did in describing the A. T. & T. research laboratory?

A. Yes, that is right. They are all included in that figure.

[fol. 8855] Q. Probably about the same proportions?

A. I should think very likely, yes.

Q. About the same class of men engaged in the work?

A. Why, they are men of equal ability.

Q. That is what I mean?

A. Their training is perhaps along little different lines.

Q. In what way?

A. Why, a great many of the engineers of the Staff are men who have specialized in consulting engineering which we do for the associated companies, the men who are commercial engineers and the traffic engineers.

Q. I see?

A. Now, the engineer on the Staff of the Western Electric Company are a different type, in that they are more laboratory specialists and experts in apparatus design.

Q. Now, in the A. T. & T. Staff, how many men are there engaged particularly in development and research work on apparatus development as distinguished from commercial engineers and the other departments of engineering which you have just mentioned?

A. I could answer that more intelligently if I had a copy of the exhibit showing the organization diagram of the department of development and research. I haven't a copy of that, I am sorry to say.

Mr Burr: It is in the record.

Q. 357 isn't it?

A. That is the total number of employees in the department of development and research. They are not all engaged on apparatus design.

Q. How many of them are engaged on the development [fol. 8856] of telephone devices or improvements; put it that way?

A. All of those people particularly are engaged on that subject.

Q. 357 then in the A. T. & T. laboratory are engaged in that kind of work?

A. That is not in the laboratory. That is in the department of development and research.

Q. And the Western Electric Company has three thousand and how many?

A. I don't know. Something over three thousand.

Q. In a department doing similar work?

A. It is not similar work, but it is supplemental work, work that is coordinated with work that these 357 people are doing.

Q. Just exactly how is this work divided between those two organizations?

A. That was covered pretty fully in my direct testimony, but to repeat it, the engineers on the General Staff are maintaining very close relations with the associated company, operating in the field. They undertake through this contact, which is also established through our department of operation and engineering, involving some five hundred other people—They undertake to develop in the first instance what should be developed to best and most economically meet the requirements of the telephone service to the public. Then, when a new piece of apparatus is required for that purpose, the conditions which it must meet are determined by the general staff and transmitted to the Western Electric Company, who undertake to meet these conditions in a specific piece. Throughout the mechanical and [fol. 8857] electrical development of that piece of apparatus the Staff engineers and the Western Electric Company engineers are in close touch. When the Western Electric Company has completed a design, the General Staff engineers consider that and test it, if necessary, making a trial under actual service conditions, and if it turns out to be the best thing for the purpose, it is recommended to the associated companies, together with such information as is necessary to insure that it is installed and operated and maintained in the best way.

Q. Is it fair to say that the A. T. & T. Research Department, development and research department, concerns itself primarily with matters of scientific principle, whereas the Western Electric Company concerns itself primarily with

matters of form and design in reference to these different devices?

A. That is true inasfar as it goes. It does not mean that that is the entire function by any means of the General Staff.

Q. I appreciate that?

A. But it is true as far as it goes. And they are not limited wholly to scientific questions, because they are intensely interested in the practical situations which the apparatus must meet also.

Q. Does the Western Electric Company Research Department do any independent work which it initiates in the way of investigation of new devices?

A. I think it does in connection with its outside business.

Q. But not in connection with the telephone business.

A. In connection with the telephone business, that is all [fol. 8858] done with the co-operation of the General Staff.

Q. Now, you stated I think that out of your budget of three and a third million you planned to spend this year a million and a half to be paid to the Western Electric Company for work which it was to do for this department?

A. Yes. You remember that was solely the budget of the department of development and research.

Q. Yes, that is what I understood?

A. That is right. Now that means this. The Western Electric Company is re-imbursed in this way for work which they do which does not result in apparatus which they make and sell. It covers work which they do on the development of telephone instruments, and it covers work which they do on all sorts of materials and appliances which are manufactured outside the Bell system and which we ask them to test and determine the properties of these materials.

Q. It does not cover anything which they subsequently put to production for sale to the associated companies?

A. That is right.

Q. Does it cover the things that the two departments work on and finally reject as unfit for use for any reason?

A. I am not sure as to that. Most of that work that we do—Examining matters which are rejected does not come to the laboratory stage—A great deal of it can be determined without that.

Q. If there was anything of that kind, it would be negli-

gible as far as the Western Electric Company expense is concerned, would it?

A. I should say that they would not be greatly involved [fol. 8859] in it.

Q. This list of over four thousand patents which you have filed here, does that represent so far as you know, practically all of the patents affecting the art of telephony that are in force at this time?

A. It represents those that are used in the Bell system.

Q. Are there any other important patents or patents outside of the Bell system that are owned by other people or controlled by other people?

A. I think there must be patents owned by independent manufacturers so-called, covering such appliances as they make and sell.

Q. Have you in mind any important examples of that kind, covering devices that are of great value in the telephone art?

A. No, I am occupied practically exclusively in Bell system work.

Q. You mean simply to say, if there are such, you do not know about them?

A. Yes, sir.

Q. You have an appropriation of three and one-third million dollars for the year 1924 in your department?

A. For the department of development and research, yes.

Q. That is the division or department for which you are personally responsible?

A. No, I am responsible for one section of it only.

Q. I keep getting you a little too high here, don't I?

A. You are promoting me.

Q. I think you deserve it. Are you able to state how that money will be spent this year according to the budget [fol. 8860] estimates?

A. Simply that it will be spent on the development work of various kinds running through the whole department.

Q. Don't you develop your budget in detail?

A. Yes. We make estimates of what various individual jobs are expected to cost and we develop it by comparison with our expenditures in the various lines of work for the past year and take account of such of that work as is carried over, and also of the new projects which we expect to initiate.

Q. And taking all of those things into consideration, you

expect to spend three million, three hundred thousand dollars approximately?

A. Approximately.

Q. In the year 1924?

A. Yes, sir.

Q. Of which a million and a half you expect to pay to the Western Electric Company for the purposes which you have recited a few minutes ago that you expect to pay them for?

A. That is right, yes.

Q. So that the work that will be actually done in your department, in the department for which this three and one third million dollars is appropriated, is one million, eight hundred dollars.

A. It is the difference between those two sums.

Q. Now, when you have done all of this work and sent out all of these specifications in bulletins and instructions and everything of that sort, I understand your testimony to be that the use of these various suggestions is entirely up to the Staff of the associated company, the Ohio Bell Company [fol. 8861] in the case we are now considering.

A. Yes, sir, that is right.

Q. Have you in mind any instances in which the Ohio Bell Company officers or engineers have failed and refused to follow any of the practices recommended by the General Staff?

A. I haven't any information as to that, one way or the other.

Q. You do not know of any instances where that has ever happened?

A. No.

Q. Do you know of any instance where any associated company has ever refused to follow any recommendation or practice recommended by the General Staff?

A. Yes.

Q. Recite those instances?

A. Well, within the last month in St. Louis, they had a little trouble there from leakage from what are known as Number 14 cable terminals, and we sent them some recommendations as to what we thought would cover the trouble, and they had some ideas of their own which they proceeded to put in practice.

Q. Did they stop the leakage?

A. I don't know yet.

Q. Were their ideas different from the ideas of the General Staff?

A. Yes, sir.

Q. Contrary to the recommendation of the General Staff?

A. Yes.

Q. Have you any other instances in mind?

A. Why, I recall a number of years ago in Chicago, quite a long time ago, where they had been operating a distributing system using cross-arms and open wire in the alleys, [fol. 8862] and we recommended the change of practice there to the use of the cable system, with frequent distributing terminals, and they felt that their system of distribution was better and they continued for quite a little time using it, before they finally decided to follow the recommendations of the General Staff, but that decision was their own and it was not under any compulsion.

Q. They finally did decide to follow your recommendation?

A. They did, yes.

Q. Have you any other instances in your mind?

A. No, I don't think of any now, but that is typical of what happened.

Q. That is, it is usual that you finally agree that the General Staff is right?

A. We do not agree to that, but in general the associated company does, yes, sir. Their experience has been that what we recommend is the right thing. We would not be doing our job right if it did not work out that way.

Q. I think that is correct. Now the American Company has acquired patents by purchase and by license as well as by invention of its employees as you have stated?

A. That is right.

Q. From what fund does it pay for the patents which it acquires?

A. I am sure, I don't know.

Q. You don't know, because you are not familiar with the accounting system?

A. I am not familiar with the accounting system and I have never had anything to do with the actual mechanism of purchasing patents.

[fol. 8863] Q. That is done by what department?

A. By our patent department.

Q. You have testified to a large saving in a number of

instances by various things that have been developed by the American Telephone and Telegraph Company's Research Department?

A. Yes, sir.

Q. The thing that I think of just now is in the standardization of supplies, when you speak of the saving of fifteen thousand dollars per year in lead pencil.

A. Well, that was just a trifling example.

Q. Yes, I understand, but I just want to get the information as to how you determine, by what standard of comparison you determine that saving of $15,000.00, comparison of what thing with what thing, or how did you get at the amount?

A. That was done by our mean who was in charge of that particular end of the standardization, and this is a case, I think, where a large number of types were replaced largely by one type, and he figured for a year the cost of buying these large members of types in small lots as against buying the one type in a very large lot.

Q. Is that a saving in an actual year's business?

A. No, sir.

Q. Or a calculated saving based upon an assumed typical year?

A. It was based on a typical year. That is my understanding, yes.

Q. Is that also true of the saving of $250,000.00 a year [fol. 8864] in paper?

A. I think so.

Q. For certain purposes?

A. Yes, sir.

Q. Are the savings that you have stated in various details based upon the same sort of calculations?

A. No, the plant savings that I have made have been based on general plant statistics for the entire Bell system. I have in full detail, I think, and I can show the entire calculations upon which each of those plant savings that I testified to are based, and I can take any one or all of those if you wish and go through it in detail to show you how the results are arrived at.

Q. Let us take the matter of cable to which you testified on page 244 and several pages following that.

Mr. Gentsch: For the purpose of the record, I would like to object to this line of evidence on the ground that if

our contention is true, that there is no contract and the A. T. & T. is the sole owner or the owner of the Ohio Bell, that evidence of savings could not be considered by this Commission as affecting the validity of this contract or the amount of return which the company receives from it, it being our contention that the A. T. & T. would be limited in its return to the cost of the articles furnished or the service rendered, and that the burden is upon them to produce such evidence as will satisfy this Commission as to what those costs are.

Commissioner Poor: By the way do I understand, Mr. Gentsch is objecting to this line of cross-examination?

Mr. Gentsch: Yes, on that ground. I do not want to [fol. 8865] interrupt, but I felt that I ought to at this time. At the conclusion of this cross-examination, I am going to ask that all of the testimony given by this witness with reference to alleged savings be stricken out as being immaterial and irrelevant to the issue here, for the reasons that I have stated.

Commissioner Poor: The cross-examination is proper relating to the matters testified to in chief.

Mr. Gentsch: I understand, but I am making this objection for the record.

Commissioner Poor: I see.

Mr. Burr: In the so-called Cleveland Telephone Case, reported in 102 Ohio State, page 341, exactly the same contention was made on behalf of the City of Cleveland as is now being made by the gentleman from Cleveland, and the Ohio Supreme Court did not take the matter seriously and did not say that the cost to the American Company must be shown or that the amount paid by the Cleveland Company for the services must be limited to the cost of those services to the American Company. Those issues were thoroughly threshed out in that case, and our Supreme Court held that if the contract was one which the Cleveland Company had the right to make, that in a matter of that sort, involving business judgment, it was for the Board of Directors of the Company to determine, with the limitation of course that the obligation of the two companies could be scrutinized, as was done in that case, and no fault found with it.

[fol. 8866] Mr. Gentsch: In reply to Mr. Burr, without intending any disrespect at all, I beg leave to differ with him as to the extent to which that matter was threshed

out in that case. At any rate, Mr. Burr, it is not going to go by default in this case and we are going to have the evidence here before we get through. So there isn't going to be any default here, whatever occurred some place else.

Mr. Burr: Are you suggesting that the gentleman who represented the City of Cleveland at that time allowed the matter to go by default.

Mr. Gentsch: I am just saying this, as I stated here yesterday, you fellows have been too smart for all of the rest of us.

Mr. Burr: That was before I got into the telephone business.

Mr. Gentsch: No, I am taking my hat off to you. You are not missing anything. As my friend Shuler said here a couple of weeks ago, they better put you on the stand. You would make a better witness than any of your witnesses. That is the way I look at it, Mr. Burr. I have just got that much respect for you. But in that case, just as was said here yesterday, what is everybody's business is nobody's business. And as a general thing, the people, the attorneys, without any disrespect to them—I do not mean that at all, but I do say that we on this side of the table, and I include myself—Are all at a disadvantage in a hearing of this kind. This part of the work is something that is new to most of us, and we have to pick up the strands as [fol. 8867] we can. The fact is that a hearing of this kind has such tremendous ramifications that it is a liberal education in itself to get ready to try it. And then you can't do it, especially so in view of the character of the evidence which my friend, Burr, and his associate counsel always introduce in cases of this kind. It is introduced in a form you cannot cheek, and introduced in that form so that you cannot check it. I have been struck in the reading that I have been doing in the last four or five months—And I have gone through record after record—I have been struck by the uniformity of the testimony of the witnesses. My friend Rhodes here is one of their star witnesses who goes from place to place. And you may take his testimony here and take it in Illinois or wherever you want to go that he has testified, and he has got it just like Mr. Burr, by rote. The testimony in one case is just the same as in the other and the people on this side of the table in the majority of cases have not the opportunity or the time to go into it and

check it, and they get away with a mass of this stuff, and they got away with a mass of that stuff in the 102nd Ohio State, through no fault of the attorneys for the city, and I am not casting any reflection on them at all; I have the highest respe for them; but they had a job that was too big and they did not have the time or the money or the assistance to do it.

Commissioner Poor: After the argument, including the exchange of pleasantries, we will overrule the objection [fol. 8868] to the testimony and preserve the exception.

Mr. Gentsch: I just wanted it for the record. Note an exception.

Q. Now, Mr. Rhodes, tell us how you figured the saving on the improvements in cable?

A. I had the data from our comptrollers reports.

Q. First let me ask you this as a sort of a starting point: Did you put in the record a gross figure of savings in cable?

A. Why, I don't remember whether I did not.

Q. Then without looking back to determine it——

A. I can tell you what I should have said if I had been asked that question.

Q. All right, tell us about that?

A. That if the so-called fine wire cable had not been employed in the plant of the Bell System, but the 19 guage cable, which had been used prior to that time, had been employed up to the present time, and as great a circuit mileage utilized as is the present case in the plants of the associated companies, that the total expense of the plant would have been close to a hundred million dollars more than it has been.

Q. Now, state how you determine that difference?

A. The figures I base it on were as of December 31, 1921. I had the total circuit mileage in cables in the Bell System, divided between aerial cable and underground cable. Would you like those figures?

Q. Yes, give those to us?

A. In aerial cable three million one hundred and ninety-[fol. 8869] five thousand, two hundred and fifty-six, (3195256).

Mr. Burr: What?

The Witness: 3,195,256.

Mr. Burr: What?

The Witness: Circuit miles in aerial cable. In underground cable, 8,779,352. That is circuit miles of wire in nndergrouud cable. The total of those items is 11,974,608. Now, since those calculations which I am proceeding to make were not intended to include savings due to 900 pair 22 *guage* cable or savings due to 24 *guage* cable, it was necessary from this figure of circuit mileage to subtract the circuit mileage for those types of cable. That it was possible to ascertain accurately from the cable shipments made by the Western Electric Company to the associated companies, and the figures which I have there, are 900 pair, 22 *guage* cable 1,480,000 circuit miles, all of which I considered was in underground cable; five and six hundred pair 24 *guage* cable, 146,000 circuit miles, of which in my best judgment about 15 per cent was in underground cable. In 900 pair 24 *guage* cable, 27,000 circuit miles, all of which I took in underground cable. Of 1200 pair 24 *guage* cable, 497,000 circuit miles, all of which I took in underground cable. The sum of those items being 2,150,000 circuit miles. Now, they gave me for figures for circuit mileage in 19 *guage* and 22 *guage* cable, excluding 900 pair, the following figures. In aerial cable, 3,071,256 circuit miles. In underground cable 6,753,352 circuit miles. A total of [fol. 8870] 9,824,608. Now from figures based on various inventories made for a number of Bell System properties——

Q. Inventories, for what purpose?

A. Inventories that have been made in connection with rate case proposition.

Q. Yes.

A. And from figures which I had showing the Western Electric Company's output of cable for several years back, I arrived at the figure of about 80 per cent of the above circuit mileage in aerial cable being 22 *guage* and about 65 per cent of the above circuit mileage in underground cable being 22 *guage*. Applying these percentages to the circuit mileage figures gave me for the circuit miles of 22 *guage* cable, exclusive of 900 pair, 2,457,000 in aerial cable and 4,389,000 in underground cable, a total of 6,846,000.

[fol. 8871] Now, from the same sources from which I obtained those percentages I arrived at figures for the cost per circuit mile for 9 and 22 *gauge* cable and found that a conservative figure for the saving per circuit mile by

using 22 gauge cable instead of 19 gauge cable was $10.00 per circuit mile for both aerial and underground cable. Applying this figure of $10.00 to the circuit mileage of 6,846,000 gave me a figure of a little over $68,000,000.

Q. That covers the saving on construction that has actually taken place?

A. For the cable alone. There is a duct saving which goes with it, which accounts for about $30,000,000 more, which I could go over in the same detail that you wish it.

Q. Go ahead and go over it. Give us that also.

A. All numbers of circuits above 300 and up to and including 600, if in 19 guage cable, would have required two cables and hence two ducts, whereas these numbers of circuits require only one 22 guage cable and only one duct. Now, about 77 per cent of the No. 22 guage underground circuit mileage is in cables larger than 300 pair. The average size of cable for this circuit mileage in cable is about 470 pair. So applying this percentage of 77 to the previously obtained circuit mileage figures gave me 3,380,000 circuit miles of 22 guage cable in cables larger than 300 pair. Dividing the figure which I have just given by 470, which is the average size of the cable as regards numbers of circuits, gave me 7,190 miles of duct saved. Now, as the plant runs on the average with about two ducts per cable, the miles of ducts saved in the system has been [fol. 8872] 14,380. A fair average figure for the cost of a foot of duct is about 40 cents. Applying this to the mileage arrived at above gives saving in first cost of $30,400,000, which added to the cable saving previously obtained of $68,400,000, gives a total of $98,800,000, which was the basis for my statement that the saving had been nearly a hundred million dollars.

Q. Now, does that calculation contemplate the cable in place or simply the material cost?

A. The cable in place.

Q. Is there any saving corresponding to the duct saving that applies to the aerial cable?

A. Why there is in a way, yes. I did not take that into account, but there is a saving, because of the smaller cables you need less expensive suspension strand; it has to be less strong.

Commissioner Maullar: Mr. Rhodes, is this improved cable available to the independent companies?

The Witness: Yes, it is sold to independent companies, after it is developed for the Bell System and the Bell System have the use of it.

Commissioner Maullar: It is being used by independent companies as well as the associated companies.

The Witness: Yes, sir.

Commissioner Maullar:

Q. How does the price to the independent companies compare with that to the associated companies?

The Witness: My understanding is it is considerably higher to independent companies than to associated companies.

Mr. Shuler: I move that that be stricken out Your Honors for the reason that the witness shows by his answer that he [fol. 8873] does not know, that is his understanding. It is merely hearsay and incompetent, and I move that it be stricken from the record.

Mr. Gentsch: I also move that it be stricken from the record for the reasons which I gave a while ago.

Mr. Shuler: It is purely hearsay evidence, absolutely incompetent.

Commissioner Poor: Since the answer was made responsive to a query from the Commission, it will not be stricken out. Of course, the Commission realizes that the objection may go to the weight of the testimony given. It is merely his understanding and has no probative value.

Commissioner Maullar: It is merely his understanding. The question as he answered it was that it was his understanding of the price, and it has no probative value.

Commissioner Poor: If you want to reserve exceptions there you may do so. It will not be stricken out.

Mr. Shuler: Yes, we want to reserve the exception.

Q. Other manufacturers than the Western Electric Company do manufacture this cable, however, do they not?

A. They manufacture 22 gauge cable up to 600 pair. I am not sure that they make 900 pair, and I never heard of any 1200 pair cable, 24 gauge, made by other manufacturers except the American Electrical Works at Providence, which has made cable for the New England Company, and I think

the Western Electric Company undertook to show them how to make this 1200 pair cable for that purpose.

Q. Do you know how their prices compare with the [fol. 8874] prices of the Western Electric Company for this fine wire cable?

A. Except that the Western Electric Company does sell it in the open market in competition with these other manufacturers.

Q. You do not know the price?

A. No, not of my own knowledge.

Q. Now, the 22 and 24 gauge cable is being used pretty generally in all new installation, is it not?

A. Wherever it is suited for transmission reasons, yes.

Q. What determines whether you use the fine wire or the 19 gauge?

A. The finer the wire the more economical is the installation. Therefore, it is used as far as it can be within proper transmission limits. For instance, if the 24 gauge cable were used in the cable carrying subscribers' lines four or five miles in length, the transmission would be weakened beyond what would be a satisfactory volume for transmission, but up to the point where it gives satisfactory transmission it is used with economy.

Q. How far does it give satisfactory transmission?

A. The 24 gauge cable up to lines possibly a mile and a half to two miles long, and in the 22 gauge cable up to perhaps four miles. It all depends on the size of the exchange and the trunk line distances. The whole transmission question comes up in the design of the plant in order to give the most economical plan. That is, you want to give a certain grade of transmission. Now, the question comes, you can use some fine wire cable. Is it most economical to use that in the subscribers' lines themselves or in the trunks con- [fol. 8875] necting the offices in a multi-office city. That all has to be studied so that the plant can be laid out on the most economical basis.

Q. The ordinary practice contemplates about two miles between exchanges, does it not?

A. That may vary. You may have exchanges in large cities—in fact exchanges may be many miles apart. It may be two miles to the next exchange, but from an exchange on the border of the city to one on the opposite border may be many miles.

Q. The trunking would be limited to about two miles in that sort of an arrangement?

A. No, you have to have trunks that go from each office to every other office.

Q. To every other office? Yes, I see. But the subscribers lines in that sort of arrangement would be limited to about a mile and a half or two miles?

A. In some of the downtown offices they would. In the outlying offices they may run considerably more than that.

Q. In a city exchange that is properly planned it is possible to use a very large proportion of the fine wire cable?

A. In new work, yes.

Q. In new work?

A. Yes, sir.

Q. And it is being done?

A. Yes, sir.

Q. Very generally whenever a new plant or new wire is installed?

A. Yes, a large part of the cable output today is in 22 and 24 gauge wires.

Q. Does your calculation there show what percentage of the new work is done—I did not catch that—with this fine wire cable?

A. No, it does not, but I could get you that information. [fol. 8876] It is my recollection that somewhere in the order of the circuit mileage output for this year in cable of the Western Electric Company is estimated to be in 24 gauge wires.

Q. That is for 1924?

A. Yes, sir, for 1924.

Q. That is a forecast?

A. That is a forecast. It is merely an estimate.

Q. Have you a similar figure for the 22 gauge cable?

A. No, except I can say from my knowledge of the whole situation that the 22 and 24 gauge is the great bulk of the cable output.

Q. And the 19 gauge is used only where the other two will not fit?

A. Yes, sir, that is right. It is used when needed.

Q. Very much as open wire is used, where it is available——

A. Yes.

Q. It is just a matter of adaptation to the immediate circumstances?

A. Yes, I think I can agree with that, according to the most economical engineering design of the plant.

Q. How, has there been an increase in cost of wire in the past ten years?

A. Now, just what do you mean by wire?

Q. In general, wire for circuit purposes.

A. Well, that varies with the cost of copper.

Q. Yes, that is determined altogether by the cost of copper, is it not, pretty near altogether?

A. Plus the cost of drawing.

Q. But the cost of the copper is the largest element?

A. The cost of the copper is the largest element in the [fol. 8877] cost of wire.

Q. Have you the information to tell us what the difference is in the cost of copper between 1914 and the present time?

A. No, I have not.

Q. Well now, I did not quite catch how you figured the saving in the duct?

A. Well, broadly speaking I figured it this way. I had a figure for the circuit miles in cable of the type I was considering. Then I had the average size of the cable, which was 470 pairs, that is, a mile of that cable would contain 940 circuit miles. So in order to get the length of the cable I divided my total circuit mileage by 940, which gave me the miles of cable, the linear miles of cable that was saved, and then I figured the duct saving corresponding to the linear mileage of cable.

Q. As a matter of fact that saving would not be realized unless you reconstructed the duct lines so as to have just half the duct capacity you had before——

A. No, it is realized in this way. It is constantly postponing the time when, if you did not have those cables containing more wires it would be necessary to build more ducts. You see putting more wires within a given cable sheath increases the capacity of our conduit systems and postpones the time when reinforcement is necessary and when new runs of cable are laid it enables fewer ducts to be placed than would otherwise be necessary.

Q. It increases the effective margin of duct space in an existing plant also, does it not?

A. That is right.

Q. Well now, Mr. Rhodes, the first cables, I think, as [fol. 8878] you stated in your direct examination were installed in an experimental way in 1882. That was the beginning of the cable experiments, was it?

A. Why that is about as early as I have any information, yes.

Q. Now, when you say they were commenced in 1882 you mean that that is when the A. T. & T. Company or the American Bell Company, as it was at that time, commenced its experiments?

A. Yes, sir.

Q. And that is the first you know of by anybody?

A. Why there may have been some bunches of wire used that might be called a cable before that time. I have in my office some historical information that would enable me to answer that a little more precisely. But whether or not some company did take a bunch of wires and wind a tape around it and make what might be called a cable before that time, I could not say offhand now.

Q. The first conduit system was in 1883 in Boston, as I understand it?

A. Yes.

Q. That was by your company?

A. I might say now my recollection is that there were cables before 1882. I think I can state pretty positively that there were cables before that time.

Q. By whom?

A. By the licensees of the American Company, that is, there were cables that were used in New York across the Brooklyn Bridge, which I am quite sure antedated 1882.

Q. Yes.

A. But it was a very small use. I did not mention the date of 1882 with the idea of stating that that was an in- [fol. 8879] vention of cable at that time, but at that time the General Staff of the American Company did undertake a careful study of the transmission properties of cables.

Q. Then when was it that you first used the 50 wires in a pipe insulated with cotton, according to what you call the Brooks system, the pipe being filled with oil? On page 238 of your testimony I think you referred to that.

A. I would like to make a note of that question and get

the information accurately for you. I have it on record, but I haven't it here. It was used in the very early days.

Q. What is the significance of the term, "The Brooks system?" Who is Brooks? What did he have to do with it?

A. The Brooks system was a system whereby the wires were pulled into a pipe and the pipe filled with oil. Oil was used as the insulating medium in the Brooks system.

Q. Who was Brooks?

A. Why other than the fact that he was the man that invented that system I couldn't tell you right off. He was not on the General Staff of the American Company.

Q. Then the next development was the use of dry cotton as an insul-ting medium?

A. Yes.

Q. Then in 1880 you got a dry paper. I think you explained that that use of dry paper was really an accidental discovery, was it not?

A. If I remember it was, yes.

Q. Whose discovery was it?

A. That was done over in the plant in Long Island, and I think I stated in answer to a question from Mr. Burr that it was done under the direction of Mr. John A. Barrett.

[fol. 8880] Q. I think you stated that Mr. John A. Barrett conducted some experiments in the development of that idea?

A. Yes, sir.

Q. But this was, I understood it, following the accidental discovery of the possible use of that sort of medium?

A. I think that is right, yes.

Q. Now, what I want to get at is the circumstances connected with that accidental discovery of the use of the dry paper as a possible medium upon which Mr. Barrett conducted his investigation or his experiment?

A. If I get your question, what happened was this. He was experimenting with this paper and I think he got on the track of that from a kind of wire that was used by milliners for making hats, and that wire was wrapped with paper, and he sought to use wire that was wrapped in that way in cable. But they did not trust a dry paper, so they used an insulating compound and tried to impregnate the core of the cable with this insulating compound. And in the course of that work they ran some of the cable through

pretty rapidly and they found its electrical properties were better than any cable they had had before, and they examined the cable carefully, and they found they had run it through so rapidly that the insulation compound had not thoroughly impregnated the core of the cable; it had not got below the surface, so they had in the interior of the cable dry paper without the filling compound.

Q. Where did they get the idea of using this milliner's wire?

A. As far as I know as I understand it Mr. Barrett had the suggestion.

Q. Mr. Barrett was working at that time for the New [fol. 8881] York and New Jersey Company?

A. I think so.

Q. Is it the corporate name of one of the associate companies?

A. It was at that time, yes.

Q. It was at that time; that company, however, is not in existence?

A. No.

Q. There has been some sort of a reorganization which covers that field with another company or two other companies perhaps?

A. It is the New York Telephone Company now that operates in that territory.

Q. Up to that time the investigation of the General Staff of the American Company in the development of cable had not accomplished very much in the way of successful development, had it?

A. Why yes, I should say it had.

Q. Were you using cable commercially before the use of dry paper?

A. Oh yes.

Q. To a very large extent?

A. To a large extent for that period, yes. Of course, the business was small at that time.

Q. But you used it, that is, the cable that was insulated by the use of dry cotton—was there an insulating compound used in connection with the cotton or was it simply the cotton itself?

A. There was an insulating compound first, and it was omitted then.

Q. And dry cotton used?

A. Yes, sir, and dry cotton used.

Q. And that was used commercially wherever cable was considered proper to be used?

A. Yes.

Q. How large a cable did you get with the dry cotton insulation? I mean how many pairs?

[fol. 8882] A. Why it is my recollection that that was used up to about 50 pairs.

Q. Who developed the multiple switchboard? Who was the pioneer in the multiple switchboard?

A. Well, the Western Electric Company engineers were very much involved in the development of it. As I understand the situation, the idea of the multiple switchboard originated in the mind of a man named Firman.

Q. Who was he?

A. He was at that time connected with the Edison Exchange in Chicago. He was shortly subsequent to that time in the employ of the Western Electric Company, and I think at that time when he was in the employ of the Western Electric Company the multiple switchboard patent was issued to him.

Q. Was that the first patent obtained on a multiple switchboard?

A. As far as I know.

Q. When was that, Mr. Rhodes?

A. Why it was somewhere around 1880 to 18—around 1880. It may have been a year or two subsequent to that time or might have been a year before. My recollection is not accurate as to that.

Q. Did his patent develop a multiple switchboard that was commercially used?

A. Yes, I think it was commercially used in Chicago.

Q. From that time?

A. From that time, and the subsequent development the engineers of the Western Electric Company were largely interested in and they had the co-operation of the engineers of the General Staff.

Q. What did Sabin and Hampton have to do with it?

A. They, as I understand it, got up a non-multiple type [fol. 8883] of board, so-called express system, which was used out in California.

Q. Do you know of the name of Joe Connell, in the development of the switchboard?

A. O'Connell?

Q. Connell?

A. I think it was O'Connell.

Q. I don't know. It may be.

A. He was with the Chicago Telephone.

Q. Yes.

A. That is the man. It is O'Connell.

Q. What did he have to do with the development of the multiple switchboard?

A. Why, I believe O'Connell suggested the use of lamp signals.

Q. When was that?

A. I am sure I don't remember.

Q. Are you familiar with the Milo G. Kellogg patents in multiple switchboards?

A. No, sir.

Q. There was a Milo G. Kellogg patent on switchboards, was there not?

A. I couldn't say. I am not familiar with it.

Q. You have never heard of it?

A. I know there was such a man who was concerned with the telephone business, but as to just what he invented I couldn't tell you.

Q. Now, did the General Staff do any work in the development of the multiple switchboard idea?

A. I think so.

Q. What is the switchboard that is in common use; what is that known as; what is the name of that in the trade?

A. You mean that is in common use today?

Q. Yes.

A. Why the type that is in most common use is the common battery multiple board.

Q. Yes. Who would you say is responsible for the de- [fol. 8884] velopment of that board in its present form?

A. Why, that was to the best of my knowledge and belief wholly a Bell system development in which the Staff engineers and the engineers of the Western Electric Company were both concerned.

Q. What would you say as to the importance of Mr. Scribner's personal contribution to the development of the present switchboard?

A. They were pretty large.

Q. Isn't it a fact that the basic principles as developed

by these other men that you have mentioned were gathered together by him and finally put in the form which is now used?

A. I think that that is true in a way. There was original work done by Mr. Carty the present head of our Department of Development and Research on the fundamental common battery switchboard. There was another type that was developed by my former Chief, Mr. Hammond V. Hays. There was another form developed by Mr. John S. Stone, a member of the Technical Department of the General Staff at the time I came into the business, and I remember personally that about 1893 or '94 I made transmission tests in the evenings on what, I believe, was the first common battery switchboards, little boards that were installed in the neighborhood of Boston. One was at Lexington, another at Wellesley, another one at Winthrop. And I remember going around to subscribers' premises in the evening and calling up another man from our department who made tests to see how well those circuits would talk. There was a great deal of development work and improvements due to Mr. Scribner, which crystallized afterwards in switchboards that were installed at Worcester, and at Louisville, Kentucky.

[fol. 8885] Q. And Mr. Scribner, who is he?

A. Mr. Scribner has been a very prolific inventor, who was with the Western Electric Company from the early days of the business, and progressed through their organization to become their Chief Engineer, and five or six years ago he retired.

And thereupon a recess was had until 1:30 o'clock P. M. of same day (Tuesday, April 22nd, 1924).

[fol. 8886] Tuesday Afternoon

April 22nd, 1924.

And also FREDERICK L. RHODES, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

Q. Mr. Rhodes, on page 309 of your testimony, direct examination, you were discussing work done by the Gen-

eral Staff on the subject of the development of switchboards, and you stated that one important step was the development of the common battery system. Explain what you mean by that—the common battery system?

A. That is a method of operation whereby the magneto generator for calling and the local battery for supplying the subscriber's transmitter with its operating current were replaced by a common battery placed at the central office. That enabled the current supply for the subscriber's transmitter to be fed out of the central office over his line, and it overcame the necessity for the magneto generator at his station and was used for signalling the operator and also signalling for disconnect when the conversation was completed.

Q. Was that common battery idea completely developed, originated and developed, by the General Staff?

A. In connection with the Western Electric Company, as a piece of co-operative work, as far as I know, yes.

[fol. 8887] Q. Who by name were particularly instrumental in developing that idea?

A. J. J. Carty, Hammond V. Hays, John Stone, Theodore Spencer——

Q. Theodore who?

A. Theodore Spencer.

Q. Which organization was he connected with?

A. The General Staff of the American Company. And C. E. Scribner in the Western Electric Company.

Q. What period of time did that development cover?

A. I should say from memory along from 1892 to 1898, the early stage of the development, and, of course, the idea has been in more or less continuous development from that time to the present.

Q. You also say on the same page that about 15 years or fully 15 years ago the question of the development of the so-called automatic switchboard was taken up. Now, has your organization been working on that proposition continuously since that time?

A. I should say so, yes.

Q. What is the Stroger system?

A. It is one form of automatic system, in which the selection is made by a rotating arm, which is raised to a certain level of a bank of contacts, and then is rotated hori-

zontally until the desired contact in that particular level is obtained.

Q. By whom was that system developed?

A. As far as I know that is invented by Mr. Stoger, and it was developed by him with the assistance of some other people, one of whom was a man named Keith, of the organization of the Automatic Electric Company, and within recent years they have been making this apparatus to our specifications which have included improvements in [fol. 8888] the apparatus and have included means whereby that type of apparatus can be used in the same exchange where there are manually operated offices.

Q. And it is this particular apparatus that you get the right to use by your arrangement that you testified to this morning with the Automatic Electric Company, is it?

A. I do not know that we get the right to use it in that way, because the associated companies are purchasing apparatus of that type from the automatic company. There were various patent questions involved, and the arrangement that I have described this morning served to allow the Automatic Electric Company to proceed under certain of our patents and certain of their patents became available for the use of the Bell system.

Q. Certain of their patents concerning automatic switchboards?

A. Yes.

Q. So that that arrangement that you testified to this morning was effected for the purpose of giving you the right to use these automatic switchboards, was it?

A. It was the right to use patents which that organization held, not to use that particular type of switchboard, but to use their patents wherever there is a conflict between their patents and the patents we hold.

Q. It was then in adjustment of some patent questions between the two companies, was it?

A. I so understand it, yes.

Q. When was that arrangement effected, do you know?

A. No, but I should say it must have been eight or nine [fol. 8889] years ago.

Q. To what extent is the Bell System using the Stroger system of automatic switchboards now?

A. I do not know that I can answer that as fully as you would like. I have some figures on that in the year 1921.

The schedule for the whole Bell system called for about 75,000 line equipment of the panel type. They are manufacturing this type of equipment, the Automatic Electric Company is manufacturing it for the Bell system in considerable quantities.

Q. That was in 1921?

A. Yes.

Q. Have you any data for 1922 on the same subject?

A. No.

Q. Or 1923?

A. No, that is all that I have. It is possible that another witness can give you that information more completely.

Q. What other witness would you suggest?

A. I don't know whether or not Mr. Allen, who was here before, is posted on that subject or not. He is more concerned with switchboards than I am.

Q. What are the advantages or disadvantages of manual switchboards in comparison with automatic switchboards?

A. I could not go into that, because that is out of my line. I am an outside plant man, and I am not sufficiently familiar with the details of the switchboard problem to go into it. It is a rather special question.

Q. Are you able to say in a general way which is the more economical in operation?

[fol. 8890] A. I think that depends on a great many local factors that have to be taken up in each specific case.

Q. What are the local factors?

A. As I say I would not feel that I could go into that, because it is out of my line.

Q. You disclaim any ability to discriminate between manual and automatic switchboards?

A. Yes, I have not been in that end of the work at all.

Q. Now, the panel type has been developed entirely by the A. T. & T. General Staff, has it?

A. In co-operation with the Western Electric Company, yes.

Q. Are there any of the panel type automatic exchanges in operation in the State of Ohio?

A. None as far as I know.

Q. Are there any of the Stroger system automatic exchanges in operation in the State of Ohio that you know of?

A. Why I think that there is one and there may be others. I don't know.

Q. Are you familiar with the semi-automatic system that is in use in some places?

A. I know there was an installation of that type that was put in for experimental purposes in Newark, New Jersey.

Q. When was that?

A. That our engineers followed for a great many years. Why, there again I can't tell you accurately, but I should say it was fully eight years ago.

Q. How long did that experiment last?

A. Oh, it lasted for a number of years, and then there were changed over subsequently to full automatic.

Q. Would you consider that experiment successful?

[fol. 8891] A. Yes, it served the purpose it was intended for.

Q. Why was the substitution made of full automatic?

A. Because it had been worked out to a point where it was felt that that would give satisfactory operation. The idea of putting that in on a semi-automatic basis was that the subscriber did not have the dial. He gave his call to the operator, but from that point on, handled it on an automatic basis. And it was used to obtain a vast amount of data as to the operation of the equipment.

Q. On page 311 of your direct examination you gave some information concerning the use of platinum in contacts?

A. Yes.

Q. And you traced the development or experiment of a substitute for platinum in those contacts through successive stages, first reducing the amount of platinum by one-half by a different method of application as I understand?

A. That is right, spot welding instead of riveting.

Q. Instead of what?

A. Instead of riveting; spot welding.

Q. Yes. You quoted a price, a pre-War price of 20 to 25 dollars per ounce for the platinum, increased by War conditions to $100.00 per ounce?

A. Yes.

Q. And you effected an economy of 50 per cent by that development, that is, by using less of the platinum?

A. Yes.

Q. You then pointed out the next step, substituting palladium for the platinum?

A. Yes.

Q. And reducing the cost fifty per cent again?

A. Yes.

Q. Now, that was fifty per cent of the previous fifty [fol. 8892] per cent I assume.

A. Yes. It did not mean that we got it for nothing.

Q. And that reduced the cost of material for that particular function to $25.00 then, I mean $25.00 per ounce, or the equivalent of an ounce of platinum?

A. It would have the equivalent of that if we had used platinum, that is, if the first cost was a hundred, the first reduction brought it to fifty and the next one to twenty-five and the next one to $12.50 on that scale.

Q. Then after the use of the palladium you substituted an alloy for the palladium?

A. Yes, sir.

Q. Effected another fifty per cent reduction?

A. Yes.

Q. That brought you down to $12.50?

A. To the basis of one-eighth of the riveted platinum.

Q. So that the final result of those experiments was to reduce the cost at least $7.50 below pre-War cost of the platinum?

A. Yes, using that as a standard of comparison.

Q. Now, you stated that there was also a total saving of from two to three million dollars in the contact metal?

A. Yes.

Q. On the system; just how did you work out that saving; what was your standard of comparison?

A. I will be glad to show you that. I would like to make all these things as clear as possible. It is not a mysterious thing. It is simple, except technical in a way. Well, I started in with data covering the years 1916 to 1921 inclusive, six different years, having data as to the cubic inches of these contact metals that were purchased in each of these years. Now, I can give you that amount if [fol. 8893] you like.

Q. Go ahead.

A. We have not, as you see, entirely eliminated the use of platinum, because there are some cases where it is still

necessary to use it. Here are the cubic inches of platinum used, beginning with the year 1916 and running to the year 1921: 192, 293, 215, 31, 119, 138.

Now, I will give you the cubic inches of palladium for those same years, beginning with 1916: 258, 514, 107, 97, 228, 375.

Now, I will give the cubic inches of the special alloy: 98, 433, 1025, 266, 1,331, 3,521.

Now, I have the average price per cubic inch of each one of these, beginning with platinum for the year 1916: 959, 1,182, 1253, 1219, 1316, 898.

And the corresponding figures for palladium: 549, 625, 802, 794, 628.

Q. These are dollars that you are talking about?

A. Dollars, dollars per cubic inch. 628 was the last figure, and 371.

Now, for the special alloy: 169, 185, 183, 180, 177, 157.

Now, the special alloy weighs 8.16 ounces per cubic inch. The palladium weighs 6.01. The palladium weighs 6.01 ounces per cubic inch. The platinum weighs 11.35 per inch.

Now, as I have said during each of the above years, certain amounts of special alloy, palladium, platinum, were purchased, and if anyone of these improvements had not been made, it would have been necessary to purchase each year an amount of platinum equal to twice the combined [fol. 8894] amount of special alloy and palladium and platinum that was actually purchased. Now, the savings I have computed for each year on the basis of taking the number of cubic inches and multiplying by the price and comparing with what it would have been if the material had been platinum instead of material which was used. Now, would you like me to——

Q. Yes, give the total?

A. Well, the total saving in first cost was $708,000 for the year 1916; $2,183,000 for 1917; $2,833,000 for 1918; $798,000 for 1919; $3,881,000 for 1920; and $6,429,000 for the year 1921. That makes a total saving for those years of $16,833,000. Now, I have taken for the figure which I have used .8 of that total figure, to allow for certain amounts of this apparatus employing this material which the Western Electric Company manufactured for sale outside of the Bell system, that is, of this total saving made in apparatus, at least 80 per cent of it was realized in the Bell system; applying

that 80 per cent gives me $13,466,000 for the total during that period of six years.

Q. Your statement in your direct examination was that you effected a saving of between two and three million dollars?

A. For each year.

Q. You did not say that. And that comes down to the end of 1921?

A. Yes.

Q. Now, those contacts that are affected by that saving are an essential part of switchboard construction?

A. Yes.

Q. On page 323 of the record, direct examination, you [fol. 8895] mention a saving of $80,000,000, which you attribute to the use of phantom circuits?

A. Yes.

Q. Now, I understand that the saving in the way of phantom circuits is the saving of one circuit out of three; is that correct?

A. Yes, four wires will handle three conversations instead of two.

Q. Yes.

A. That is right.

Q. Does that measure the saving?

A. That saving in the wire and in the pole line construction which carries the wires, less the cost of the phantom coils that are required and the transpositions that are required to make a phantom effective. That was taken into account in my computation of the saving.

Q. Then when you come to the subject of quadded cable, which is connected with the phantom circuit, as I understand your explanation, you mean a saving of $10,000,000 by the use of quadded cable?

A. Yes.

Q. Is that to be added to the eighty million?

A. Yes. It is a different thing.

Q. It is a different thing?

A. Yes, it is not comprehended in the eighty million.

Q. It is the application of the same principle?

A. Yes, sir.

Q. I understand that the quadded cable you say enables you to carry the phantom principle into the cable?

A. That is right.

Q. Without the addition of additional wires?

A. That is right. That is, before we had the quadded [fol. 8896] cable for each group of four wires in the open wire portion of the plant, which carried three messages, it was necessary to have six wires in extending that into the cable.

Q. But by the quadded cable idea you carry the phantom principle into the cable?

A. That is right.

Q. That, however, is not applicable to ordinary cable construction in local exchanges, because of the cost of the terminal apparatus, as I understand it?

A. Not so much that. I think the cost of terminal apparatus I spoke about in connection with the carrier system, but its principal use is for bringing toll lines in. It is not used in subscribers' lines; and it may some day be used to a certain extent in trunk circuits connecting exchanges, but as it stands today its principal and almost sole use is for bringing toll lines into cities.

Q. What is a repeater?

A. Well, a repeater or an amplifier is a device whereby the telephone current is weakened, and after passage over a long line is made to control a new source of energy, bringing fresh energy into the conversation and stepping it up, so to speak, and sending it out over another stretch of line in the same wave form that it came in, but revivified, if I may use the term, strengthened, so that it can go on for practically an indefinite distance.

Q. And it can be revivified at intervals along the line?

A. Yes.

Q. What is the principle upon which that device works?

A. It employs, with a large amount of auxiliary appa- [fol. 8897] ratus a vacuum tube, in which the outgoing current passes from the filament of the tube to a plate, and the incoming current is impressed upon the grid, so that, practically as a valve operates this potential of the grid controls the strength of the stream of electrons flowing through the grid from the filament to the plate.

Q. Whose idea was that originally?

A. The vacuum tube idea originally was the invention of Deforest for wireless telegraphy. In that form it was not applicable to a telephone repeater, but our Staff engineers saw the possibility of using that principle, and we procured the rights for telephonic communication from Mr.

Deforest, and then proceeded on a very comprehensive scheme of development, whereby it was made available to operate as a telephone repeater. We had a repeater before that time, which was what was termed a mechanical repeater.

Q. Yes.

A. It was operative but troublesome.

Q. This was an improvement on it?

A. Oh yes.

Q. Operated on an entirely different principle?

A. Yes, sir.

Q. Rather than an improvement on the mechanical.

A. It was on the same principle, in that it supplied new energy to the attenuated telephone conversation at that point, but it operated by having the elements of a receiver and transmitter connected together, so that the incoming current acting on the receiver portion of the element controlled the transmitter and brought in new energy in that way. Its limitation was that it had what is termed mechan- [fol. 8898] ical inertia, that is, it had mass, and it was difficult to make this flow of rapid telephone undulations, thereby taking the stream of electrons, which was devoid of mechanical inertia, and thereby we effected a better arrangement.

Q. Back of Deforest there was the development of the tube idea, was there not?

A. There were tubes that were used for other purposes. There was one invented by an English scientist named Crooks.

Q. Edison did something?

A. I don't recall that.

Q. And Fleming?

A. I think Fleming did something on it. But they did not have telephone repeaters.

Q. I understand; what the General Staff did was to take the ideas that had been developed by Crooks originally, possibly Edison and Fleming and Deforest, and bring it into its present form; is that it?

A. The Deforest idea is the only one that was used to any appreciable extent, and there we took something upon a telephone repeater and by devising circuits and auxiliary apparatus and improving the design and construction of the vacuum tube, we made an operative telephone repeater

which had not existed in the form of a vacuum tube before that time.

A. You used a figure at page 377 of your direct examination of $4.90 as the market price of the transmitter, receiver and induction coil; that, I understand, is the price at which the Western Electric Company sells those devices to the general trade; is that correct?

A. That is right.

Q. At what price do they sell those instruments to the A. T. & T. Company or the associated companies—the A. T. [fol. 8899] & T. Company?

A. Yes, they do not sell them to the associated companies but they manufacture those instruments for the American Company. Their figure to us includes nothing for patents and nothing for sales expense or for advertising, and nothing for development. Lacking those factors the total price to the American Company is $3.42.

Q. How is that divided among the three items?

A. Do you want them both on the general trade, and the American Company?

Q. Yes.

A. The price of the transmitter to the general trade, which is known as the No. 323 BW transmitter is $2.00; the price of the 323, which is a similar instrument, to the American Company is $1.48. The price of the 144 AW receiver to the general trade is $2.05. The 144 receiver to the American Company is $1.37. The No. 46 induction coil to the general trade is 85 cents and to the American Company 57 cents. I think I was asked about that at the end of my direct examination before and those figures are already in the record.

Q. I did not find them. There was a lot of miscellaneous chatter at the end and I may have overlooked it?

A. Yes.

Q. The price you have given to the A. T. & T. is the net price that they actually paid, is it?

A. I understand so, yes.

Q. You gave a figure of depreciation of seven per cent in your estimate of the cost of this service. What length of life does that seven per cent depreciation figure contemplate?

A. I think that is already in, too, and as I remember it, and I should say the same thing now, about eleven or

[fol. 8900] twelve years, with a salvage of fifteen or twenty per cent.

A. Yes.

Q. Fifteen or twenty per cent?

A. Yes.

Q. What is the life of the induction coil?

A. Why I have taken this as an over-all figure for all of the instruments. It does not, of course, mean that that is the physical life due to wear and tear alone, but it takes into account very largely changes and improvements that are made as the result of our development work, whereby new and improved types come along and gradually sweep out of existence the previous types.

Q. The fact is that the induction coil is practically indestructible, is it not, so far as physical——

A. So far as physical life goes. The terminals may break off, but if there were no change in type by and large they would last for a very long time.

Q. How about the receiver and transmitter?

A. Why the same is true, but I should say to a less extent, because they are more liable to be broken and injured when desk stands are knocked over, but the actual wear and tear life would be very much longer than the figure I have given.

Q. Yes.

A. That is due to the change in style as the instruments are improved.

Q. It is not the practice, is it, when the style is changed to take out the old ones and put in new ones?

A. Not at once, but it begins and runs over a term of years. The rapidity with which that is done is wholly in the hands of the associated companies. They are free to return their old instruments and get a new type without additional charge.

[fol. 8901] Q. At any time they see fit to do it?

A. Yes, sir.

Q. Have there been any radical improvements in the last five years that would make it advisable for an associated company to retire all of its transmitters and receivers and take up new ones?

A. No, not to retire them all. There has been an improved type of transmitter, as I said, the 337, which is enough better than its predecessor to make its use advantageous on long lines, but not enough to require an extensive substitution.

Q. And extensive substitutions of transmitters, receivers and induction coils have not been common in the history of the Bell companies, have they?

A. I should say they have, yes. As the types have changed there have been general substitutions, very general substitutions. The old single pole instrument has gone entirely out of existence. A large proportion of the 122 type of receivers has.

Q. How long ago did the old single pole go out?

A. I don't know when the last ones came in.

Q. How long ago was this general substitution that you speak of?

A. Those instruments began to go out of service when the 122 type of receiver began to come in.

Q. Was the 122 the first bi-polar type that you put out?

A. No, there were bi-polar types that were put out in small quantities, at least as far back as 1894, but they began to go out extensively about 1900 to 1902. Now, the same thing has gone on in the case of transmitters. The earliest form of the solid back wall set, the 239 type, was swept out [fol. 8902] of existence fairly rapidly as the type that is used on desk stands, began to come in, and that type has changed.

Q. On page 343 you refer to carrier current telephony. Just what is that?

A. That is a method for carrying four additional conversations over a pair of wires in addition to the one which it normally carried. It is a very highly involved proposition. Each telephone current is combined with a high frequency current of a different periodicity. For instance, one is combined with a 15,000 per second high frequency current, another with a twenty another with a twenty-five and another with a thirty.

Q. You mean 15,000?

A. 15,000 alterations per second, and those are transmitted simultaneously over the line and then filtered out, according to the carrier frequency, of fifteen, twenty, twenty-five or thirty thousand frequency. And this high frequency carrier current is removed, and it having been diverted into a special channel, can be used as a talking channel independent of the others. It is a means for increasing the number of conversations that can be carried on over a given amount of wire.

Q. Is that principle in common use?

A. Not in common use. No, it is increasing.

Q. Is it in use on the Long Lines or the local exchanges?

A. It is used on the Long Lines and to some extent, and an increasing extent, in the toll line plants of some of the associated companies. The New England Company is using it on its own toll lines and the Pacific Company is using it on [fol. 8903] toll line.

Q. It is a toll line proposition?

A. It is, yes.

Q. Is it in use in Ohio?

A. I don't know. I don't think it is.

Q. What did General Squire have to do with the development of that idea?

A. He had something to do with it. The amount he had to do with it will be determined shortly, because it is a matter that is in litigation now.

Q. Between General Squire——

A. And the American Company.

Q. And the A. T. & T. Company?

A. Yes.

Q. General Squiare dedicated his invention to the public, did he not?

A. Why, I think he did at one time, and then I think there was some drawback on that as I understand it.

Q. Is he contesting the patent rights?

A. I believe he is.

Q. With the A. T. & T. Company?

A. I believe he is, yes.

Q. He is contesting the patent rights?

A. I believe he is.

Q. With the A. T. & T. Company?

A. I believe he is, yes.

Q. What litigation has there been or is there now pending concerning telephone patents?

A. Generally?

Q. Yes.

A. I couldn't tell you. That is out of my line. I happen to know about this particular case.

Q. Do you know that there is or is not a considerable amount of it going on at this time?

[fol. 8904] A. My impression is that there is not very much. There has been a certain amount, a small amount, I think, in the radio field, but nothing very much.

Q. What is a spiral coil, spiral loading, I will put it?

A. I don't know that I just exactly get that. There is a form of loading, continuous loading, which is made by winding a small iron wire around a copper wire in a continuous spiral. Possibly that is what you have in mind.

Q. I think that is what I have in mind, yes.

What is that used for?

A. It is used principally in submarine cables.

Q. It is used on the Havana cable you have testified about?

A. Yes, sir.

Q. On the Catalina Island cable, also?

A. I don't remember whether it is in the Catalina cable or not, but it is in the Havana cable.

Q. Who invented that?

A. Why I don't know. That was known in the art for a good many years.

Q. It is not an A. T. & T. invention, is it?

A. No.

Q. The A. T. & T. staff, General Staff, has done some work, has it not, on the application of the multiple principle to telegraph wires?

A. Yes, this carrier current proposition that you asked me about just now is applicable to telegraph use of the wires, and we make use of simultaneous telegraphy and telephony on many of the Long Lines circuits.

Q. The A. T. & T. Company owned or controlled the Western Union Telegraph Company for a number of years, did it [fol. 8905] not?

A. They had at one time a large interest in it. I don't know that it was a controlling interest, but it had a large interest.

Q. And they undertook to apply that principle to the telegraph lines, did they not?

A. You mean carrying on simultaneous telegraphy and telephony?

Q. Yes.

A. Not as far as I know. There was an interchange of wires at times of emergency between the plants. That went on.

Q. How was that interchange effected? Were the telegraph wires used for telephone purposes?

A. And the telephone wires for telegraph purposes, in the event of sleet storms which destroyed the plant of one company. It was an attempt to maintain a service for the public.

Q. But there was no general effort made to use the telegraph wires for telephone purposes?

A. Not as far as I know. It never came to my attention. I don't know how far that might have gone.

Q. Isn't it a fact that the A. T. & T. Company announced repeatedly in annual reports and elsewhere in its publications and public announcements their purpose to utilize telegraph wires on a large scale for telephone purposes?

A. I think that was the proposition, but there were a great many practical difficulties in the work and it worked out that it did not go very far.

Q. Were there extensive experiments in that direction, seeking to bring that about?

A. There was some work done on that, yes.

[fol. 8906] Q. How much work was done along that line?

A. I could not say.

Q. Did you have anything to do with that experimentation?

A. No.

Q. The receivers and transmitters that are now in use on the Bell system, have you in mind any changes that are likely to be made that will bring about any general substitution of new forms of receivers and transmitters?

A. Well, there is a very active experimentation which has been going on for the last three years and is going on now, seeking to obtain still better forms of instruments. As to when that will come about, it is impossible to say, but I believe that there will be changes in the future, yes.

Q. What is the line of the experimentation? What is it that is sought to be brought about?

A. Better quality of transmission, closer reproduction to the character of the human voice, and also increased volume, which will admit of still further economy in the plants of the associated companies by the more extended use of fine wire cable.

Q. Greater carrying power.

A. Yes.

Mr. McConnaughey: I haven't any more questions to ask. I do not know whether my colleagues have or not.

Commissioner Poor: Have individual counsel any questions they would like to ask.

Mr. Shuler: It may be necessary for me to bring down the record of the case you testified in befo[illegible] unless you take my word for it that it is in the record.

[fol. 8907] Cross-examination.

By Mr. Shuler:

Q. Mr. Rhodes, I just want to ask a couple of questions, one especially on your saving on the instrument sets. You took eight per cent depreciation, did you not?

A. Seven.

Q. Seven? That is figured on the cost of the original, the original cost of the instrument?

A. It is figured on a base of the figures that I submitted, $4.50.

Q. Which is supposed to be the original cost?

A. Which is a conservative figure of the first cost of the set.

Q. And your understanding is that depreciation has to be based on the original cost?

A. I did in that particular case. If I had based it on anything else I would have taken a different rate.

Q. Now, if that original cost or book cost was $2.25 instead of $4.50, of course, your result would be just one half of the amount you found; is that right?

A. If I figured on a $2.20 instead of——

Q. $2.25?

A. $2.25 instead of $4.50, and applied seven per cent to both figures——

Q. And all your other percentages the same, you would get just one half?

A. In those that I figured as percentage, it would have been, yes, that is, the return would have been on the——

Q. Well, wait. Let me put it this way. Take an instrument, the book cost of which is $2.25, what is the annual cost to the company?

A. That is a different problem from the one I worked on. [fol. 8908] You see what I had in mind was this——

Q. Just a minute. Just answer my questions. I want you to do this.

In your direct examination you took an instrument which cost $4.50, and to that you applied certain percentages of depreciation, interest, taxes, repairs and so forth?

A. My repair item was not a percentage.

Q. All right. Now, I want you to apply the same figures to an instrument that cost $2.25.

A. If I applied the same percentages to those items, if the

same percentage was applied, it would result in half the sum.

Q. Correct.

A. Obviously.

Q. Is there any reason why you would apply different percentages or different figures simply because the book cost in the one case was $4.50 and in the other case was $2.25?

A. I was not dealing with book costs. I was making an estimate of what it would cost——

Q. Please answer my question.

A. I can't, because you are setting up a condition different from what I figured, and then you are asking me to do something to that. I was not taking the book cost.

Q. Let me ask you this question, Mr. Rhodes; what is the difference between book cost and original cost?

A. I don't know.

Q. Then how does it make any difference whether you do take book cost or original cost?

A. Because what I was undertaking to do was to make an estimate of what it would cost this company to provide an instrument service if it did not get its instruments in the [fol. 8909] way it gets them now. So I was not dealing with a book cost. I was dealing with what it would cost them to buy instruments today to replace the instruments they have got.

Q. You took the original cost?

A. If you are pleased to call it that; it is what it would cost them to get the instruments today.

Q. Very well.

A. I wanted to show that we were talking about the same thing.

Q. I do not attempt to do anything tricky.

A. I did not think that, but I wanted to show we were talking about the same thing.

Q. If you take a cost of $2.25 instead of $4.50, your result is one half of 99 plus, which, as I recall, was your result.

A. Subject to a number of differences along the way. One of them was in the item of repairs, which was not a percentage in my estimate.

Q. Can't you figure it out in a moment on the basis of $2.25?

A. Subject to the difference in the item of repairs and subject to the fact that I would probably in that case take a

different figure for my cost of administration and perhaps for my reserve for contingencies and subject to the fact that there is a ratio of the number of instruments to the number of stations, and that there is another item for the carrying of the stock of instruments, that would be true.

Q. Now, wait, Mr. Rhodes. I am only asking you what I think is a fair question.

A. Yes.

[fol. 8910] Q. I want you to answer my question, considering every element that you considered when you answered Mr. Burr's question, and that is all. If you considered all of those elements that you have mentioned and intend to mention when you answered Mr. Burr's question, I want you to consider all of those items when you consider my question.

A. Then I would have to take a little time to think it over, because some of these figures would be on a different basis, and I would have to think them over.

Q. Would you be willing to make an approximation, not for the purpose of accuracy, but an approximation that would be sufficient for our purposes here?

A. I would be willing to make an approximation.

Mr. Burr: With the understanding, of course, that an approximation is only an approximation.

Mr. Shuler: Certainly, but I want it to be within 125 per cent correct.

The Witness: Now, I want to fairly answer your question.

Q. Yes, and I want to be perfectly fair with you.

A. Surely. And I should say on that basis that it would run a little under 60 cents.

Q. A little under 60 cents?

A. Yes, sir.

Q. But not more than 60 cents?

A. I should not suppose it would. Those are comparable estimates based on those different first costs you have given.

Q. Now, Mr. Rhodes, you recognize this.

[fol. 8911] A. That looks familiar to me.

Mr. Shuler: I am showing Mr. Rhodes the annual report of the Directors to the stockholders of the American Telephone & Telegraph Company for the year ending December 31, 1923, and on page 28 of that report you find that the Bell owned telephone stations were 10,406,155.

Q. Is that correct, Mr. Rhodes?

A. I presume it is, sir, if it is in the annual report.

Q. I did not ask you that. I asked you if I read correctly from the annual report?

A. You did.

Q. Now, I show you page 42 of the aforementioned report, and I ask you if that report does not show among the assets of the company as of December 31, 1923, telephones, $33,275,285; is that correct?

A. Except you have left off 85 cents.

Q. All right. Now, Mr. Rhodes, if you divide the number of telephones into that book value, as set up in that report, you have a per telephone value of $2.44, do you not?

A. I don't know. I haven't done it.

Q. Will you do it, please?

A. You mean divide the number of stations into it, not the number of instruments but the number of stations?

Q. The two figures I have read.

A. That one was the number of stations, not number of instruments.

Q. Every station the evidence has been is an instrument. $2.24, isn't it?

A. What do you say the answer to that sum was?

[fol. 8912] Q. $2.24?

A. I make it $3.20.

Q. Maybe my figures are wrong.

A. It is certainly over three. 10,400,000 into 33,275,000 must be over three.

Q. You must be right. Now, Mr. Rhodes, do you know whether or not of your own knowledge as telephones are moved or as telephone sets are sent out by the A. T. & T., if the price increases, they are put on the books at the increased price and not the original cost price.

Mr. Burr: Put on whose books?

Mr. Shuler: The A. T. & T.

The Witness: No, I do not know how they are put on the books.

Q. You don't know that?

A. No.

Q. Now, Mr. Rhodes, you testified before the Public Utilities Commission of Ohio in 1920, didn't you? Have you got the record page of your testimony?

A. Before the Ohio Public Utilities Commission in 1920? That is this Commission?

Q. Yes.

A. Yes, I did.

Q. Have you got page 483?

A. No, I have not got that record.

Q. Do you remember whether or not you testified at that time that the General Staff was very active in relation to switchboards and that Cleveland was sure to benefit very greatly thereby?

Mr. Burr: I think the record is the best evidence.

A. I don't remember it, no.

Mr. Burr: I do not want to put you to any unnecessary [fol. 8913] trouble, but we would like to have it.

The Witness: Understand I am not disputing the facts. I might have said that, and I do not see anything now that would be wrong about it.

Mr. Shuler: I might be wrong just as I was with the amount.

Q. Mr. Rhodes, I will ask you if, before the Public Utilities Commission of Ohio, January 14th, 1920, you were not asked this question: "I understood you to say, Mr. Rhodes, that this switchboard work was currently and now under way in your engineering department?" "Answer: That is true. There has never been a time since my connection with the General Staff when that work has been more active than it is at the present time." Is that correct?

A. I think it probably is.

"Question. The company is now receiving the benefit of the economies produced in those ways, the associated companies?" "Answer. Yes, sir." Is that correct?

A. I assume so, yes, sir.

Q. At that time the company that had made the application was the Cleveland Telephone Company, was it not?

A. I presume so. If that is the record, I will take your word for it.

Q. Cleveland Telephone Company?

Mr. Burr: Yes.

The Witness: I do not question it at all.

Q. Now, Mr. Rhodes, can you tell the Commission what [fol. 8914] and how in any way the company, the Cleveland Company, has benefited in any wise by that great activity?

A. Well, I have not prepared myself on anything special.
Q. I asked you if you could and your answer is what?
A. I can give you a couple of instances.
Q. Well, that is what I want. On switchboard now?
A. Yes.
Q. That is all right. Give them.
A. Would you like to have them?
Q. If you know, yes.
A. Yes. One thing that has been done, in trunks of unusual length, where the ordinary central office apparatus does not operate satisfactorily, and it is necessary to install auxiliary equipment at the outgoing end, there is a new arrangement developed that reduces the first cost of this equipment.
Q. Is that switchboard?
A. Sure. Trunk equipment is part of the switchboard.
Q. Go ahead.
A. And a new arrangement has been developed whereby during periods of moderate load, call circuit positions may be vacated and the trunks at that position transferred by the operation of a key, so that the trunks in one half of the position are handled by the adjacent operator.
Q. That is the work that was going on in the General Staff previous to January, 1920, is it?
A. I cannot say definitely, but I think it is.
Q. Now, Mr. Rhodes, just be fair with me?
[fol. 8915] A. I am trying to be fair.
Q. I asked you a simple question.
A. That is work that has been done in the last two or three years. Now, whether it was actually under way at that time I cannot tell, but I am merely mentioning that as an example of the continuous work on that subject.
Q. But will you please remember I am not questioning you on direct examination. I am cross-examining you, and I premise—make my premise and ask you to answer those and not what you know of something later. Can you say——
A. Not definitely.
Q. Let me ask a question so that the record is clear.
A. Yes.
Q. Can you say now in what way the Cleveland Company or the Ohio Bell Company's properties in Cleveland have benefited since January, 1920, by work that was going on at the time you testified here January 14th, 1920? That is my question.

A. I can only answer that, sir, in general terms, that the development work on that subject is constantly going on, affecting all portions of the equipment.

Q. That is all on that. Now, Mr. Rhodes, in that same case at page — we seem to have lost the page—do you recall now whether or not you did testify in that case as to the per station cost to the Cleveland Telephone Company under the four and one half per cent contract?

A. I don't recall.

Q. You put in an Exhibit, page 46[illegible], and Mr. Wilson [fol. 8916] stated: "I believe the record shows that the amount of the four and one half per cent payment, figured against the number of stations, comes down to $1.78 a year. I am not quite sure, Mr. Marshall, but I think that is about the figure." The question is to you, Mr. Rhodes, "And of that 98 cents in your judgment would represent what it cost the Cleveland Telephone Company to furnish the instrument service alone." "Answer: Yes." Is that correct?

A. I think so.

Mr. Shuler: Now, Mr. Burr, will you furnish me—I was going to ask this witness a question, but there is one figure left out of my set of figures, so I cannot ask him, but I would like to have the sum paid by the Cleveland Metropolitan Company to the A. T. & T. for the year 1923 by virtue of the four and one half per cent contract. You know the Bell Company keeps those records separate and apart from its bookkeeping?

Q. Mr. Rhodes, did you testify that you understood all the license contracts were alike?

A. Why, I do so understand, with possibly one or two exceptions, small exceptions.

Q. Are those exceptions in New York state?

A. Not as far as I know.

Q. Do you know that the New York Telephone Company furnishes these instruments to its connecting and controlled companies at 75 cents a year?

A. I don't know, but I see no reason why they should not.

Q. Do you know whether or not the 22 gauge wire was used by the independents about or previous to 1900?

[fol. 8917] A. Not the kind of fine wire cable used in 22 gauge wires that I was talking about.

Q. Just answer the question and I am satisfied.

(Question read.)

A. Now, you see the 22 gauge wire—not the 22 gauge wire I was talking about, but possibly a 22 gauge wire was used. Possibly so. It was used in the Bell system generally, long previous to that time, but not the kind I was talking about.

Q. And I believe you say that these things, 22 gauge, phantom coil, bi-polar receivers and desk stands, have been and are available to the independent companies?

A. Of certain types, yes.

Mr. Shuler: I think that is all.

Cross-examination.

By Mr. Kinnison:

Q. In getting the relation between the Western Electric and the A. T. & T., do I understand you to recite as one of the benefits to be conferred by the A. T. & T. that it provides a purchasing agent for the associated companies?

A. The Western Electric Company does so act.

Q. I mean did you recite that as one of the benefits to be conferred by the license contract provisions?

A. I did not so state, but I think it is.

Q. You think it is?

A. I think it is.

[fol. 8918] Q. You did so state in your testimony in a recital of the benefits the A. T. & T. confers to its associated companies, the benefits of the common purchasing agent. Didn't you so testify?

A. I don't recall that I did in that language. But I think the fact that its purchasing arrangement does exist is a benefit.

Q. The purchasing arrangement is self-sustaining, is it not, from the Western Electric Company?

A. Yes, sir.

Q. That is they are fairly paid and compensated for acting as purchasing agent?

A. I think so.

Q. There would be no need for any additional compensation to be paid to the A. T. & T. for securing a common purchasing agent?

A. I should not so regard it, that there was.

Q. It should not be classed as a benefit?

A. I think it is a benefit that it was set up.

Q. That is to say, you think the providing of a common purchasing agent who is fairly compensated for the purchasing that he does is a benefit?

A. I think it is a benefit to the associated companies. Somebody had to set the arrangement going.

Q. Somebody such as the A. T. & T. Company would be called upon to pay for finding a common purchasing agent for them?

A. I should not say that they were called upon to pay for it. It is simply a benefit that does flow out of the arrangement. I do not think you can specifically evaluate some of these items, of which that is one.

Q. As a matter of fact does it deserve an evaluation?

[fol. 8919] A. It is a benefit. I do not know how to evaluate it, except I do know that the associated companies are saving large sums of money by concentrated purchasing through the Western Electric Company.

Q. And isn't the relation which they have with the Western Electric Company one which any independent company would be glad to assume with them, to act as purchasing agent for them?

A. It might be so.

Q. Then the A. T. & T. confers no benefit, does it?

A. I think there is a benefit there, and whether it would have occurred if there had not been the license contract, I am not saying in this answer.

Q. Tell me what the benefit is, I mean as being given to the company by the A. T. & T.

A. Whatever benefit there would be in that would be the fact of supervising the relation, which the A. T. & T. Company does. It has an assistant vice president who looks at the matter from the associated companies' point of view, to be sure that there are receiving the full benefits.

Q. Do I understand you to say that the A. T. & T. supervises to see that the associated companies are fairly treated by their common purchasing agency?

A. It does. It checks up the Western Electric prices and their basis of prices.

Q. That is one of the benefits?

A. It is.

Q. Passing on to your patents, Mr. Rhodes, how many pat-

ents did you say the A. T. & T. held or controlled at the present time? Just approximate it? 4,000?

A. Yes, nearer 5,000. I would rather give it to you ac-[fol. 8920] curately. On January 1st, 1924, there were 4,768, and there were 2,742 applications pending.

Q. Now, do you know as of your own knowledge how many of those patents the A. T. & T. Company has actually put into use?

A. As I told you it was somewhere under a thousand that were actually employed in specific apparatus.

Q. Of a varying degree of apparatus, I suppose?

A. Yes.

Q. These other patents which are not in use, as I understand you to say, you simply patented or obtained control of to prevent somebody else from keeping you perhaps from using them?

A. That is one of the purposes, so that we will be free.

Q. Quite an item of your research expense goes into these patents which are presently not available?

A. I would not say a large proportion of it. I do not know what the figures are. But we do not purchase very many of the patents. They are mostly patents devised within the system.

Q. The ratio of a thousand to five thousand would be fair?

A. Oh those that are actually in use today in specific apparatus, that is right, yes. The others are for the protection of the development of the art in the future.

Q. That is to say, your history shows at the present time you are obtaining control of five patents for the use of one?

A. No, I should say they are all in use, but there are only about a thousand of them that result in specific apparatus.

[fol. 8921] Q. Tell me how they are in use.

A. They are in use in protecting the lines of development.

Q. Protecting them?

A. Yes, so that we should be free to take the same method in all matters and not have to recommend something that is inferior because there is a patent that somebody else might take out covering this same thing that would prevent our using the best.

Q. Actually it would prevent an independent inventor going forward and developing along the lines of the four or five you hold in reserve; isn't that the practical effect of it?

A. It might be or it might not be. The purpose I am quite sure is not that. But the purpose is so that we will not be

held up in our development work by some outstanding patent that somebody might want an exorbitant price for.

Q. To protect yourself you have to bar the other man?

A. I do not think it bars anybody. Anybody is free to go ahead and invent anything he wants to.

Q. If I understand, your theory of it, you hold it to protect yourself; if it did not bar the other man, it would not protect you?

A. The protection is it does not allow somebody else to prevent our doing what we want to in development.

Q. And it works the other way, that it prevents them from going beyond your patent?

A. If somebody comes in contact with our rights under a patent which we have, he would not be able to use it.

Q. You are using actually in your physical operation of [fol. 8922] the company, one out of five.

A. I think that is right, yes.

Redirect examination.

By Mr. Burr:

Q. Mr. Kinnison referred to independent telephone companies availing themselves of the services of the Western Electric Company in the matter of purchases. What is the fact as to whether or not independent companies have the benefit of prices paid to the Western Electric Company by the associated companies?

Mr. Kinnison: You are mistaken if you are quoting me. I did not raise that question.

Mr. Burr: You did not say that, no, but you referred to an independent company which might avail itself of the purchases made by the Western Electric Company if I understood your question?

Mr. Kinnison: No.

Q. Then I will ask you this question. Have the independent companies the benefit of the same prices for telephone material sold and furnished by the Western Electric Company as the associated Bell companies have?

A. I understand not.

Q. In which case are the prices lower?

A. I understand that the price to the associated company is always as low——

Mr. Shuler: I object.

[fol. 8923] Mr. Kinnison: He has covered that once in the record.

Mr. Shuler: I object on the ground that he doesn't know.

Mr. Burr: Let us hear his answer.

Mr. Schuler: It is hearsay.

Mr. Burr: No, it is not.

The Witness: I know it as I know many things, because it is part of my business to know, being in the telephone business, and I know that the price to the associated company is always as low as, and generally lower than, the price to the independent companies.

Recross-examination.

By Mr. Shuler.

Q. Have you seen bills rendered to independents and to the associated companies for the same article?

A. No, my knowledge comes——

Q. You have answered my question, Mr. Rhodes.

A. Well, I have not seen bills.

Q. Do you know Mr. Rhodes that the Western Electric does not charge the associated company the exact price it pays for the article plus the commission?

A. No, I do not know that it does not charge that.

Q. Do you know that if the Western Electric Company buys coal for an associated company and pays $4.00 a ton for it, less a ten per cent discount, so that it actually pays $3.60 [fol. 8924] a ton for it, that it sells it to the associated companies at $4.00 a ton plus a commission?

A. No, I do not know that.

Q. Don't you know that that was testified to in the New York case?

A. No.

Q. You did not hear it?

A. I did not hear it.

Q. You did testify at that case, did you not?

A. I did.

Q. If Mr. Sylvan so testified in that case, you think it would be true, do you not?

A. I think Mr. Sylvan's testimony is true, yes. I did not hear it. But he is a truthful individual.

Q. Now, I do want to ask you a question. You have traveled throughout the United States on telephone matters quite extensively, have you not?

A. Yes.

Q. You have testified in a great many cases on behalf of the associated companies?

A. I have in a number, perhaps 25.

Q. And the A. T. & T. always paid those expenses, did they not?

A. I put my vouchers in to the Chief Clerk of our department. I don't know what becomes of them after that.

Q. Are you familiar with the character of service rendered by the independent telephone companies in Michigan and in Nebraska?

A. No.

Q. You are not?

A. No.

Q. So that if those commissions say that the services rendered by the independent companies in those states are equally as good as that rendered by the Bell Companies in [fol. 8925] those states, you are not in a position to either affirm or deny that statement

A. I do not know the character of the service they furnish, no.

Mr. Shuler: That is all.

Cross-examination.

By Mr. Gentsch:

Q. You testified before the Utilities Commission of Illinois in the Chicago case, did you not?

A. Yes, I have.

Q. You know that there was certain testimony introduced in that case that showed that 97 per cent of the profits of the Western Electric Company were derived from sales to the A. T. & T. Company and its subsidiary companies, do you not?

A. No, I do not know that.

Q. Do you know what proportion of the profits or business of the Western Electric Company is done with the A. T. & T. and its subsidiaries?

A. No.

Q. Didn't you know that the testimony was given there before the Illinois Commission that notwithstanding the fact that 97 per cent of the profits of the Western Electric were derived from the sales to the A. T. & T. and its

subordinates, that that covered only 72 per cent of the business which the Western Electric did?

A. No, I did not know that. I went there and testified and came away. I don't know what the rest of them did.

Q. You would not say that that was not true, would you?

A. I cannot say one way or the other about it because [fol. 8926] I do not know.

Q. Well, you know that the A. T. & T. owns approximately 98.99 per cent of the Western Electric, don't you?

A. I think that is right, of the common stock, yes. I think that is right. I understand that to be the case.

Recross-examination:

By Mr. McConnaughey:

Q. Mr. Rhodes, in your direct testimony at page 401 you told of the different bases of compensation for the instrument service at various times during the history of the Bell companies. I think you stated that the original charge was $14.00 per year per set of instruments?

A. That is right.

Q. It was adjusted at different figures and on different bases from time to time from that time down to 1902, when the four and one half per cent of the gross receipts was fixed as the basis?

A. That is right.

Q. What was it just prior to the change in 1902 when the four and one half per cent was adopted?

A. I cannot tell you, except that it is my understanding that it totaled a larger amount to the American Company, that is, the change at that time to the four and one half per cent basis produced a reduction in the amount the associate companies paid, but as to what the basis was I cannot tell you. I don't know.

Q. Do you know why four and one half per cent was fixed as the basis?

A. No, sir.

[fol. 8927] Q. Will you procure and put into this record a statement of the various bases of compensation from the beginning down to the present time for each year, together with the gross amount that was paid to the Bell Company, either the American Bell or the American Telephone & Tele-

graph Company, for each year, on account of these license contract services?

A. For all time you mean from the beginning?

Q. Yes, from the beginning down to this time.

A. I can only say as I have for the other questions that I will tell my superior officer I have been requested to do that.

Mr. McConnaughey: We ask the Commission to direct the witness to procure that information.

Commissioner Poor: I do not know. He has not testified that that information is available to him or in his possession. We do not want to try to compel a witness to produce something that is not within his power.

Mr. McConnaughey: It is just a method of asking the Commission to ask the Ohio Bell to produce this information.

Commissioner Poor: That might be one way of doing it, but we do not want to direct the witness to produce something that is not in his power.

Mr. McConnaughey: Let's see what Mr. Rhodes can do, and then we will take it up later with the Commission in some other form.

Mr. Shuler: You can report to Mr. Burr within a week whether or not you could obtain it or couldn't you do it within a day or two?

[fol. 8928] The Witness: I will simply do the best I can. I will report that I have been asked to produce that information. I haven't it.

Recross-examination.

By Mr. Gentsch:

Q. I want to ask you another question, Mr. Rhodes. Don't you know that the uncontradicted testimony in the Chicago case before the Utilities Commission showed that the stockholders of the Western Electric Company had received all of their investment back plus $12,000,000, plus eight per cent per annum upon the investment up to the time that testimony was given in 1920.

Mr. Burr: I object to the question.

A. I don't know anything about it.

Q. Don't you know that that is the fact?

A. I don't know anything about it.

Q. That is one of the things they did not tell you.

A. Who did not tell me?

Q. Either the A. T. & T. or the Western Electric?

A. As I told you I went out in that case and testified and came away. I don't know what else went on in the case.

Q. You did not hear any talk out there about there being any such uncontradicted testimony before that Commission?

Mr. Burr: It would not be competent for him to testify that he had heard the testimony.

[fol. 8929] Mr. Gentsch: Well, if he knows—that is what I am asking him—if he knows whether those are the facts or not.

Mr. Kinnison: He has testified that the relation between it and the associated companies was upon a reasonable basis.

Commissioner Poor: He has answered this question, that he does not know. Any other cross examination of this witness? Have you, Mr. Hagelbarger?

Mr. Hagelbarger: No.

Cross-examination.

By Mr. Miller.

Q. Do you have supervision of the purchasing of office supplies and appliances?

A. Do I?

Q. Yes.

A. I do not.

Q. You testified in direct that so much a year was saved on items like that, writing paper, pencils, typewriters, stationery?

A. Yes.

Q. You have charge of that?

A. No, I got that information from a man named Lyon, who had charge of that information.

Q. Whether it is correct or not you do not know, only that that is what he reported to you?

A. Yes,

Q. You do not know how he got those figures?

A. No.

Commissioner Poor: Any other questions of this witness?

[fol. 8930] Mr. Gentsch: We may want to call him back later for further cross examination. We would not want him to be excused. We do not want the Commission to close the door, because there is certain of his testimony, a large part of it, that we cannot cross examine on at this time without further information.

Mr. Burr: My understanding was that the witness was to be cross examined at this time, and that was to end the matter.

Mr. Gentsch: Sure, that is what you want to do, to end it, and end it just as quick as you can. But we haven't got certain facts upon which to base certain questions.

Commissioner Poor: We want to keep the proceeding as regular as we can. The original direct examination was sometime ago and the intermediate time was allowed to prepare for the cross examination. If anything specially comes up requiring information from any source, you can get it and the Commission may grant your request.

Mr. Gentsch: Now, that we do not have any misunderstanding about this proposition, is the Commission going to rule that we cannot call back any of these witnesses for further cross examination after there has been an opportunity, for instance, to check the books, the inventories and the expense accounts. It is manifestly impossible for anybody on this side of the table to intelligently cross examine anybody upon the great mass of testimony that is in here, because we have had no chance to go into the basic facts and investigate them.

[fol. 8931] Commissioner Poor: The Commission has not ruled that way at all.

Mr. Gentsch: I did not think so.

Commissioner Poor: We have tried to indicate, with this time to prepare for cross examination, we want to keep the matter as orderly as we can, and just as fast as we can cross examine and conclude with the witnesses, we want to do it. If the counsel have anything that they desire to cross examine with reference to further, after he has been produced here, by submitting that to the Commission, if they feel that that is reasonable and the witness should be recalled the Commission will grant that privilege.

By Mr. Shuler:

Q. I believe I asked you, did I not, if you would make an effort to bring certain information to us relative to the amount of revenue under the four and one half per cent contract, and also the amount of the expenses of the General Staff, and you said you would inquire of the proper officers or an officer, and let me know?

A. That is right.

Q. Have you made that inquiry or request?

A. Yes.

Q. What was the response?

A. I took the matter up with Mr. Burr. I have not undertaken to ascertain the cost to the American Company because Mr. Burr advised me that the matter was irrelevant to this case. I also took it up with our Vice President and General Solicitor, Mr. Bracelen of the company, and he sustained Mr. Burr's judgment.

Q. So then you did not ask any officer of the A. T. & T., for instance, Mr. Gifford?

A. No, I did not go beyond Mr. Bracelen.

[fol. 8932] Q. Your general solicitor?

A. Yes.

Mr. Gentsch: That comes in in line with my motion yesterday. We will try and have that formal motion ready to present to the Commission tomorrow morning. This testimony makes it very important.

Mr. Burr: Let the record show that we will not probably attempt any redirect examination at this hearing, with the idea that we want to get these witnesses through their cross examination as fast as possible.

Mr. Gentsch: For the purpose of the record—I am not asking the Commission to rule on it now—but I do ask, and I am moving that all of the testimony of Mr. Rhodes with reference to the alleged value of the alleged services rendered by the A. T. & T. Company be stricken out as immaterial, irrelevant and incompetent in this case, his direct and cross. I will urge that later, but I want to make the record right now.

[fol. 8933] And also G. A. Kositzky, recalled as a witness, for the purposes of cross-examination, continued his testimony as follows:

Cross-examined by Mr. Shuler:

Q. Mr. Kositzky, you are the same Mr. Kositzky who testified on behalf of the telephone company several weeks ago?

A. Yes, sir.

Q. In that testimony you testified to considerable length as to your past experience. Am I correct in interpreting that to the effect that your experience has been that of a construction engineer, operating engineer, and, if you please, as a financial engineer.

A. Why I don't know about the financial engineer, Mr. Shuler. I have been engaged in all kinds of telephone engineering work.

Q. You would say you are both a constructing and operating engineer in relation to telephones?

A. That is right. I merely forecast the company's requirements, financial requirements, in connection with our provisional estimates. In that respect I have knowledge as to the money required for construction purposes.

Q. But you are and consider yourself a construction and an operating engineer in telephony?

A. Yes.

Q. Now, you testified as to the value somewhat of the services of the A. T. & T. General Staff. You spoke particularly about their making out income tax returns?

A. Yes.

[fol. 8934] Q. Mr. Kositzky, are any of the Bell Companies that you know of companies that operate without any net profit?

A. Operate without net profit?

Q. Yes.

A. Yes.

Q. That is all. Then it is to the great advantage of the A. T. & T. Company to make out a consolidated return, is it not?

A. I do not believe they make out a consolidated return. I believe they make out a return for each company. It is for uniformity's sake.

Q. Don't you know as a matter of fact that their income tax return is made out as a consolidated company?

A. I do not know.

Mr. Gentsch: I object to Mr. Burr shaking his head.

Mr. Burr: My head did not move. If it did it was altogether automatic.

Mr. Gentsch: You may not have done it intentionally, but three or four times this afternoon I have noted that same thing, and I did not say anything about it.

Mr. Burr: You are quite mistaken. My head did not move. I was not paying any attention to the witness. The fact of the matter was I was drawing pictures on my pad.

Mr. Gentsch: Please try not involuntarily to shake your head.

Commissioner Poor: I do not know that we can control Mr. Burr's head. It would be improper to attempt to instruct the witness.

Mr. Burr: For me to attempt to instruct this witness by nodding my head would be absurd.

[fol. 8935] Mr. Gentsch: It happened, and I just don't want it to happen again.

Mr. Burr: Probably the motion of my head was exaggerated by the fact that I wear an eye-shade. I will try to hold it stiller than usual from now on.

Q. Is the relation between the A. T. & T. and the associated companies, particularly the Ohio Bell Company, that of a manager or an advisor?

A. Advisor.

Q. Have you seen a letter recently sent out—I don't want to put it that way, because that assumes. Put it this way. Do you know whether or not recently the New York office, the American Company, has sent a letter to the various associated companies, asking them, requesting them, to make immediately application for increased rates?

A. No, sir. I have seen no such letter.

Q. You have read the report for 1923 of the American Telephone & Telegraph Company?

A. Yes, sir.

Q. Did you read at the bottom of page 9, in which they say, having spoken of inadequate rates, "Where such situations exist or arise our associated companies in those sections or localities will take steps to correct them, and it is expected that with those increases in revenue no general increase over present rate levels will have to be undertaken in 1924?"

A. I remember reading that, yes, sir.

Q. Doesn't that to your mind show that the New York Company does do some dictating?

Mr. Burr: I object to the question.

Mr. Kinnison: That is a fair question.

[fol. 8936] Mr. Burr: It is for the Commission to decide.

Mr. Kinnison: No, it is for cross examination. The witness has committed himself to the fact that it was advisory and he has a right to cross examine him further.

Mr. Burr: Counsel is asking the witness to construe a sentence or sentences in the annual report. If any such construction is to be made that certainly is the province of the Commission.

(Question read.)

Mr. Kinnison: That is a fair question. He is quoting from the official record of his company once removed.

Mr. Shuler: I will add to that question——

Commissioner Poor: Just a minute.

Mr. Shuler: I want to add some more from the report. I want to add to that question also from page 17 of the report, where they say, "In the last annual report we referred to the effort the associated companies had made during the year to bring the rates up to the points demanded by the prevailing high costs of labor and materials. We were able to report satisfactory progress at that time. During the past year this work has been continued in states where rates were still below the minimum reasonable level, in the conviction that the telephone service must be made self-sustaining in each state."

I will now await the ruling on the question.

Commissioner Poor: I think the witness may answer the question. The Commission will give it what weight it should have.

Mr. Burr: Note an exception.

[fol. 8937] The Witness: I have nothing to do with the management of the company, and if any such instructions are given, I know nothing of that. At least there were none to my knowledge.

Mr. Kinnison: He does not answer the question, Mr. Shuler.

Mr. Shuler: No, I know he did not.

Q. You do not think the language here, our associated companies in those sections or localities will take steps to

correct them," referring to inadequate rates, can be construed to the effect that the New York Company does direct the associated companies in relation to management or obtaining proper rates.

Mr. Gentsch: You mean the New York Company or the American Company?

Mr. Shuler: The American Company.

Mr. Burr: I make the same objection.

The Witness: I cannot answer that question, Mr. Shuler.

Q. Mr. Kositzky, you have also acted in many cases as appraisal engineer, have you not?

A. Yes, sir.

Q. What do you think was a proper annual depreciation, a fair annual depreciation rate, ten years ago for telephone companies?

A. You mean the composite rate of all——

Q. Yes, precisely.

A. Higher than today.

Q. Higher than today, but you would not venture a per cent?

A. Between six and seven per cent was the rate commonly used eight or ten years ago. It is about six per cent now. [fol. 8938] Q. Would the percentage of underground cables have any effect on that per cent?

A. Yes.

Q. If there were more underground cables today than there were then, the rate would be lower, would it not?

A. Yes, sir.

Q. Do you know what per cent of the American Telephone properties, the American Company properties, and by that I mean the associated properties, is in underground cables today?

A. I do not.

Q. Don't you know that in the report of 1923 at page 29 they say that 66 per cent of the total mileage is underground?

A. That is not dollars.

Q. I said percentage of mileage; I mean mileage.

A. That means 34 per cent of the wire is aerial and 66 is underground.

Q. No, not necessarily.

A. You are speaking now of the mileage of wire.

Q. This report says that 66 per cent of the total mileage

was of December 31st, 1923, underground cable, that 22 per cent was aerial cable, and less than twelve per cent open wire. Now, in your opinion don't you think this growth in the long life property ought to show a lower annual depreciation rate rather than a higher one?

A. Yes, the composite rate naturally would be lower.

Q. That is right.

A. But there is one thing——

Q. You have answered my question.

Mr. Burr: Wait a moment. Now, explain.

[fol. 8939] Mr. Shuler: He has answered, and he can explain it on your redirect.

Mr. Burr: No, he has a right to explain it right now. Finish your answer, Mr. Kositzky.

Mr. Gentsch: I object.

Commissioner Poor: The witness has a right to explain.

Mr. Gentsch: I note an exception.

The Witness: The introduction of the 24 gauge cable also makes the cost of the underground much cheaper now than it was years ago.

Q. That then would be an additional reason why the rate of depreciation should be lower.

A. Not necessarily. You have more wire mileage underground, but at the same time you have less cost per mile relatively.

Q. Certainly, but the rate of per cent depreciation depends on the age life to a very large degree, does it not?

A. Yes, but you are speaking now of a composite—or a specific percentage.

Q. Have you any idea, Mr. Kositzky, of the amount of underground cable mileage ten years ago?

A. No, I have not.

Q. Do you know how much of the information which your company receives from the A. T. & T. Company was actually developed by that company and how much was developed by an associate company or an independent company or some outside person?

A. I do not, no.

Q. On any one of the things which you have evaluated, do you, of your knowledge know what percentage of the work of development or invention was done by the General Staff?

[fol. 8940] A. No, I do not. I know that——

Q. That answers my question.

A. We get the information from the General Staff.

Q. Do you know what the development of the A. T. & T. General Staff was with relation to '22 gauge wire?

A. Yes, as far as I know they developed the 22 gauge wire.

Q. Answer my question.

Mr. Gentsch: The question calls for yes or no.

Q. Do you know? The question is perfectly plain and calls for a categorical answer.

A. What is the question please?

(Question read.)

A. You mean in cable?

Q. In the 22 gauge wire?

A. As used in the cable?

Q. Cables, yes, sir.

A. They developed the 22 gauge cable.

Q. What did they do? What was the development? What was the development they did?

A. I cannot answer that in detail.

Q. Why do you say that they did develop it?

A. Because that has been my general understanding. I know of no one else who did.

Q. Any development in telephony in the past 20 years has been done by the General Staff; is that correct?

A. Oh, I would not say that.

Q. If you do not know who did develop anything in the past twenty years, you say that it was done by the General Staff; is that right?

A. The Western Electric Company did some of the [fol. 8941] development. The associated companies are responsible for some ideas.

Q. Now, you said in answer to my question about the 22 gauge cable or wire that because you did not know who did develop it you attributed it to the General Staff; is that right?

A. Generally, yes.

Q. Do you think that is a fair answer?

A. That is the best answer—that is my opinion.

Q. Do you think then that any development in telephony that has been made, unless somebody has called it to your

direct attention, that it was done by John Jones, that it was done by the General Staff?

A. No, not necessarily.

Q. You cannot tell the Commission what the particular thing the General Staff did towards developing the 22 gauge cable was; is that right?

A. No.

Q. Yet you say to this Commission that they did develop the 22 gauge cable?

A. As far as I know.

Q. And when you made your estimate of savings on 22 gauge cable you made it on the basis that all of the development of the 22 gauge cable was made by the General Staff?

A. Yes, sir.

Q. Don't you know as a matter of fact that 22 gauge cable was first used——

Mr. Kinnison: Wire.

Q. Wire—was first used by the independents?

A. I do not.

Q. Don't you know that Mr. Rhodes testified here that the General Staff did not claim the credit for the introduc-
[fol. 8942] tion or development of the 22 gauge cable itself?

A. He said—no, I did not hear him testify to that. He said a 22 gauge wire may have been used but the development of the present type of 22 gauge cable was a product of the General Staff.

Q. Wasn't this his language——

Mr. Burr: I object.

Mr. Shuler: I will give it to you. I will quote it from his testimony.

Q. Wasn't what he said this, that the manufacturing process was developed by the General Staff, and that is what he claimed? Do you remember that? If you do not remember it, answer no; if you do remember it, answer it yes.

A. I don't remember that.

Q. Now, you testified about the pole setting truck. Do you know what it costs to operate that truck with four attendants?

A. No, I do not. We are getting those figures now, Mr. Shuler.

Q. You don't know what it costs to set the same number of poles in the regular way you have been doing in the past?

A. Generally, yes.

Q. How much? Seventy poles, I believe, was your——

A. The machine has a capacity of about 75 poles a day, yes, sir.

Q. What would be the cost for setting 75 poles per pole with 30 men?

A. It usually runs about one pole per man per day.

Q. That is how much in dollars?

A. Whatever the wages are. Sometimes they pay——

[fol. 8943] Q. Just take any time, any definite time today.

A. Probably ten or twelve dollars.

Q. Per pole?

A. Yes.

Q. Can you give us an approximate cost with the pole setter?

A. No, I cannot, because the question of the depreciation of the pole setter is quite an important item, and carrying charges on that machine. It costs about $9,000.

Q. Depreciate it in a year, set aside an annual depreciation which will allow you to junk it at a year, what would it be?

A. You would also have to make allowances for rainy weather, cold days, and so forth. The 75 pole capacity is not an average run, but a maximum run.

Q. Then to set 75 poles a day would cost $360.00, present method; is that right? 30 men, and you say you save from ten to twelve dollars a day?

Mr. Gentsch: No, that is not what he said.

Mr. Shuler: He said that the 75 poles would cost from ten to twelve dollars per man day. Now, there are twelve men working one day, 30 men working one day, and 30 men at $12.00 is $360.00 a day, and 30 men at $10.00 is $300.00. That is correct, isn't it?

A. Yes.

Mr. Shuler: He said the pole setter would set 75 poles per day.

Q. Am I right, Mr. Kositzky?

A. As its maximum.

Q. At its maximum capacity?

A. Yes.

Q. That today it takes 30 men to set 75 poles in one day?

A. You are talking about two different things. I said on the average one man could set about one pole per day.

[fol. 8944] You are talking about the machine at its maximum daily output. That machine probably year in and year out will probably set thirty poles per day.

Q. If you will answer my question we will hurry this very much. All that I am trying to get at is, you say a pole setting truck, working with four men will set 75 poles per day maximum?

A. Yes, sir.

Q. You said that under the present system of setting poles it would take 30 men one day to set 75 poles?

A. No.

Mr. Burr: You are shaking your head at Mr. Shuler, Mr. Gentsch.

Mr. Miller: One man per pole per day would be 75 men.

Mr. Burr: $890.00 is the answer you are trying to get at us.

Q. Under the present method——

A. One man on the average will set one pole per day, and this machine will at a maximum set 75 poles per day.

Q. With four men?

A. Yes, sir. On the average we figure that this machine displaces about 30 men, or rather four men with this machine will take the place of 30 men——

Q. How much would that saving be?

A. Oh, I don't know.

Q. But it is very liberal to your side?

A. It was enough to prove in the machine, Mr. Shuler, on that basis, and we purchased the machine.

Q. Can't you give us an approximation? You have had no trouble to find out the saving in the cable, although [fol. 8945] it involved a tremendous amount of work?

A. There is a saving there.

Q. Of how much?

A. A dollar a pole.

Q. $75.00 a day?

A. If they set 75 poles; probably more of a saving then, because it is the maximum.

Q. Mr. Kositzky, isn't my question simple?

A. You are speaking of a maximum day's output of this machine with four men, and I tried to say that this machine does not set 75 poles a day.

Q. I did not ask you to say 75. You said it.

A. That is what it will do as a maximum day's output.

Q. Now, Mr. Kositzky, I would like to have the record show in a very concise way a fair statement from you as to the saving in setting 75 poles or let us make it 70 poles; let us say the machine only set 70 poles. Now, give me just briefly and concisely, being very fair to your side, what would the saving be per day, using the truck as against the number of men you use today to set 70 poles?

A. You would have to let me use my paper and pencil to figure it out.

Q. Will you do it tonight and bring it in the morning?

A. All right.

Q. Now, you did testify or in your appraisals you did state you did not use that truck method of setting poles, I believe?

A. No, sir.

Q. Your appraisals then include costs according to the way and as the plant actually was constructed; is that correct?

A. No, the appraisals are the way we would set the poles today if we introduced any labor saving devices—I will [fol. 8946] correct my former statement; on the reproduction theory it is the way we would do the work, not the way the work was done.

Q. Why didn't you use the truck in the Dayton and other cases?

A. Take in Cleveland, for instance, we couldn't very well run this truck in a man's back yard.

Q. You have not appraised Cleveland, have you?

A. No.

Q. I did not ask you about Cleveland. We are in the toll line case remember, Mr. Kositzky?

A. That is where this machine is now being used, on the toll line plant.

Q. But you do not use it in the toll line case?

A. No.

Q. In your appraisals?

A. No.

Q. When you came to charging overheads in the toll line case, what did you adhere to, the overheads that were charged actually in the line or what it would cost today to put up a brand new property or plant?

A. The overheads that are experienced today.

Q. You included the actual amount spent by the company at the time it constructed it?

A. No, that would be original cost. This is reproduction.

Q. You also in your appraisal of the toll line property constructed it right through and included interest during construction, did you not?

A. Yes, sir.

Q. Although at the time it was constructed it might have been constructed piece meal; is that right?

[fol. 8947] A. I do not know how the plant was constructed.

Q. You are also in your appraisal of the toll line property including taxes during the period of construction?

A. Yes, sir, that is right.

Q. When the General Staff comes out here, Mr. Kositzky, to advise with you, who assumes responsibility for that expenditure as to the future, you or the General Staff?

A. What expenditure? This man's traveling time?

Q. No, he comes out here and advises you to make a certain expenditure.

A. He does not advise us to make a certain expenditure.

Q. Does he order you?

A. We usually have a problem in which we consult with him how to solve that problem.

Q. Supposing his advice to you is to go ahead and make the expenditure and you go ahead and make the expenditure; who assumes responsibility in the future if it is a failure or a success?

A. I don't know of any cases where they have instructed to do a thing any particular way. It is usually left up to us to decide.

Q. Who is responsible for the way in which the exchanges in Dayton and Canton have been unified?

A. The Ohio Bell Company.

Q. Yourself then?

A. I had a great deal to do with it, yes, sir.

Q. Did the A. T. & T. General Staff help you?

A. Yes, sir.

Q. To a very considerable extent?

A. Yes, sir.

[fol. 8948] Q. How many sets of transmitters and receivers and induction coils now in use in the Ohio Bell System were actually furnished by the A. T. & T. Company?

A. I haven't the exact figure, Mr. Shuler. I don't know exactly.

Q. What figure did you use when you made your cost to the Ohio Bell Company if it furnished its own?

A. I used the total instruments.

Q. In service?

A. In service.

Q. Now, that was approximately 500,000, was it not?

A. Plus the stock and the reserve.

Q. How many of those instruments as of June last year were instruments that were not furnished at all by the A. T. & T. Company?

A. I could not tell you.

Q. Then how can you tell this Commission what the saving to the Ohio Bell Company was by this service on those instruments?

A. The A. T. & T. stands ready to furnish us instruments for every station in the state, although there are a number now that they are not furnishing. Yet just as rapidly as they are being replaced——

Q. When those——

Mr. Burr: Let him finish.

Mr. Shuler: I thought he was finished.

The Witness: Just as rapidly as we take in these telephones that have instruments other than Western Electric make or American Bell instruments, they are furnished.

Q. And when you take them out, the old Ohio State, you junk them, do you not?

A. Most of them.

[fol. 8949] Q. How do you treat fixed capital account in that case?

A. It is written off of the books.

Q. When you appraised the Dayton property did you give any value to the sets of the Ohio State?

A. I couldn't say just how Mr. Williams did handle that.

Q. You didn't have anything to do with that?

A. Mr. Williams made the appraisal.

Q. What is the actual amount of taxes paid by the Ohio Bell Company on the instrument sets owned by the A. T. & T. Company?

A. I don't know.

Q. Have you any idea?

A. No, sir.

Q. Then why in your set-up did you charge—you know that they do pay the taxes on them, do you not?

A. I think they do, yes, sir.

Q. Then why did you charge two per cent as part of your estimate as to the cost to a person in case he were to put in his own?

A. The tax rate is something over two per cent on the taxable value. It computes about two per cent on the purchase price.

Q. It does? You mean to say all of your property is taxed in the State of Ohio at its purchase price?

A. Well, the rate is considerably over two per cent on the tax value.

Q. Yes, but what is your tax value?

A. I don't have that.

Q. What does your tax value represent to the cost price?

A. It is less than the cost price and the rate runs over two per cent.

Q. Will you furnish us with the actual amount of the [fol. 8950] A. T. & T. sets furnished of the Ohio Bell system and the independent, too?

A. As of any particular date?

Q. June 1st last year is all right. Make it June 1st and January 1st. Mr. Kositzky, you have had tremendous experience in consolidations, have you not?

A. Yes, sir.

Q. Unifications?

A. Well, I don't know just what you mean.

Q. We are unifying in the State of Ohio, are we not?

A. The service, yes.

Q. Did you ever have any unification experience before this unification in Ohio within the past few years?

A. Yes, sir.

Q. Considerable?

A. Yes, sir.

Q. In Brooklyn, didn't you?

A. No, sir.

Q. New York?

A. No, sir.

Q. New Jersey?

A. No, sir.

Q. Where?

A. Indianapolis, Indiana, points in Missouri, Kansas and Texas. Some in Illinois.

Q. Now, Mr. Kositzky, you testified that the A. T. & T. were pioneers in advocating the joint use of poles, and you connected that with work of Mr. Rhodes as early as 1910. Later on you indicated that such joint use of poles is advantageous in respect to the frequent saving of two lines of poles, with their first cost and carrying charges; is that correct?

A. Yes.

Q. Has it been the practice of the Ohio Bell Company and its predecessor, the Central Union and the Cleveland Companies, since 1910 to take advantage of every oppor- [fol. 8951] tunity to constructor use poles jointly with Electric Light Companies and other companies such as telephone and telegraph?

A. Generally, yes.

Q. On your appraisals how did you appraise the poles in that kind of a case?

A. Strictly according to ownership.

Q. Where one company owned and leased to the other, you credited it to the owning company?

A. Yes, sir.

Q. So that if out of a thousand poles 500 of them were owned by someone else, you only charged to the Long Lines Company 500 poles?

A. What do you mean by the Long Lines.

Q. The toll lines. We are in the toll line case.

A. I don't know. There aren't so many joint poles in the toll lines. The joint lines are mostly in exchange.

Q. Let's get the principle established. I don't know whether there are many or not. Let's get the principle established. That is what you did.

A. Are you talking about joint poles with electric light companies.

Q. Any company?

A. I thought you mentioned them?

Q. I mentioned electric light companies and telegraph companies?

A. Yes, we have joint poles with electric light and other telephone companies.

Q. At any rate you appraised the property of the Ohio Bell toll lines department and let us say there are 10,000

poles in that line, one thousand of which were owned by other companies. Did you in your appraisal include those thousand poles as a part of the reproduction cost new of the toll line property?

[fol. 8952] A. We should not and I do not believe we did.

Q. What is that?

A. We should not and I do not believe we did.

Q. You do not believe you did?

A. No, sir. It is not our practice and we should not include it in our appraisal.

Q. And it should not be part of the reproduced property, should it?

A. No, sir.

Q. To that extent it is reproduced as you find it, part owned and part leased?

A. Yes, sir.

Q. Now, have you done the same thing in your appraisals in the cities?

A. Yes, sir.

Q. Isn't it the present policy and practice of the Ohio Bell Company to use joint poles wherever it is possible?

A. Well, possible and practicable.

Q. There hasn't been any other companies that you know of opposed to such a policy has there?

A. Why occasionally we have a case with an electric light company.

Q. No, you get my position wrong. The question is, Mr. Kositzky, do other telephone companies generally oppose the policy of joint use of poles?

A. With the Ohio Bell Company?

Q. No, no, get me. All telephone companies have poles?

A. Yes.

Q. Now, all companies that operate telephones themselves, do they have any objection, if the other fellow is willing, to putting their lines on the other fellow's poles and making joint use of poles? Do I make myself clear?

A. I think so, Mr. Shuler. I know of cases where the [fol. 8953] other fellow did object to it.

Q. I did not ask you that question. Do any telephone companies have objection as a policy to placing their lines on other poles, if the other fellow is willing?

A. If conditions are satisfactory there should be no objection.

Q. Now, do you find many people owning poles who object to the telephone companies using their poles?

A. Frequently.

Q. Why do they object, Mr. Kositzky?

A. The question of capacity of the line, the question of maintenance of the line, the financial stability of the other company.

Q. Now, Mr. Kositzky, to what extent in Ohio do you find objection from the other fellow?

A. I cannot cite any specific case, but I can say cases——

Q. Let's put it this way then. Have you not had a case since you have been in Ohio where you wanted to have joint use and have been refused by the owner of the pole line?

A. Yes.

Q. How many times?

A. I cannot state.

Q. What are you doing, if anything, in the way of obviating any such objections? Did you answer that question, Mr. Kositzky?

A. No, I did not.

Q. Do you understand the question?

A. I think I do. We try to bring about reasonable arrangements where it is desirable to have joint construction, to remove the obstacles that make it undesirable or questionable.

Q. And you pretty generally succeed in obtaining their consent in such cases, do you not?

A. Not exactly. In many cases it is a question of finance, [fol. 8954] and it requires a stronger pole. The other company is not ready at this time to assume its financial responsibility on the additional construction costs or costs at this time.

And thereupon the further hearing of this matter was adjourned to ten o'clock, Wednesday Morning, April 23rd, 1924.

[fol. 8955] Wednesday Morning

April 23, 1924.

And also G. A. Kositzky, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. Shuler:

Q. Mr. Kositzky, we finished last evening, or rather we were talking last evening about joint use of poles?

A. Yes, sir.

Q. Take in the City of Cleveland for the last ten years, what companies have used in their businesses poles or pole lines?

A. The Cleveland Illuminating Company, The Ohio Bell Company, The Ohio State Company, The Postal Telegraph Company, The Western Union Telegraph, the Long Lines of the A. T. & T. Company. That is all that I can name right this minute.

Q. Those were and are sound financial companies, isn't that true?

A. I think so, yes, so far as I know.

Q. So that because of financial situations you have had no trouble with *with* about joint use of poles, isn't that right?

A. So far as the Ohio Bell is concerned, that is right. I believe the Ohio State had some difficulty with the Illuminating Company.

Q. You do not get my question. My question is this, that all of those companies being sound financial companies, you [fol. 8956] would not have had any difficulty about arranging joint use with any of them because of financial reasons?

A. Generally, no. But I think you have one point wrong, Mr. Shuler, if you will permit me to straighten it out—when I said "financial". Supposing there are two pole lines on one side of the street. One company is ready to rebuild its line. The other company with whom it would be desirable to build this line is not yet ready. Then there would be financial reasons why those particular lines should not be rebuilt jointly today. The company itself may be entirely sound financially. We run into that frequently in connection with these rural companies, companies in rural sections. That is also true of the Western Union and the Postal people. We have difficulties with them on individual lines for financial reasons.

Q. Couldn't that be adjusted by postponement on your part?

A. Not very well. If our poles need replacing today and the other company's poles are suitable for five or ten years

longer, I can see good reasons why they would wish to continue as they are.

Q. Mr. Kositzky, so far as the cities of Ohio are concerned, and by that I mean the larger cities, like Cleveland, Toledo, Dayton, Akron, Canton and Youngstown, are concerned, you do not have very general trouble about arranging for joint use of poles, do you?

A. Yes, we do. We mentioned Toledo here recently, the difficulties there.

Q. You have answered. Can you give us the difficulties in Toledo?

A. It is the restriction, voltage restriction, as covered in [fol. 8957] one of the city ordinances, limiting the voltage of electric light to 300 so far as its use of signal circuits are concerned.

Q. That is peculiar in the State of Ohio to the City of Toledo only?

A. Then we have voltage restrictions in Dayton, for instance, on the part of the Electric Light Company.

Q. How long has that been true?

A. As long as I can remember, five or ten years.

Q. You have been in Ohio for ten years, have you?

A. No, sir, I have been in Ohio about three to five years.

Q. How do you know that it has been in Dayton for ten years?

A. I know this has existed for ten years, five to ten years.

Mr. McConnaughey: That is not by ordinance.

The Witness: No, sir.

Q. Can you give us inventories showing the total number of exclusive Bell poles and the total number of joint poles in Cleveland, Toledo, Akron, Canton and Dayton?

A. Why, I cannot, but I guess it can be done.

Q. It can be furnished, can it?

A. I think so, yes.

Q. Especially it could be furnished us in those cities in which you have recently made appraisals?

A. Yes, I think the appraisals would speak for themselves. We have appraisals on file, I believe, in most cities except Cleveland.

Mr. Burr: Do I understand that it is intended by that [fol. 8958] question to inject into this toll rate hearing the pole inventories that are involved in all of these exchange

cases? Not that we have any objection to anybody having the information, but it increases the size of this record so much, Mr. Shuler.

Mr. Shuler: The only thing is this, Mr. Burr. You put Mr. Crunden on at great length to explain matters that took a day or more, and what bearing it had on the 4½ per cent contract I spoke of at the time. Yet it went on. Further, you put Mr. Kositzky on and asked him a great deal of outside matters. And again, I understood you to say to the Commission in one of your arguments, when we objected to the length to which the hearing was going, that it was agreed that certain of the evidence here could be used in specific cases. I think I am correct in that.

Mr. Gentsch: Any of the evidence here might be used in them.

Mr. Shuler: It is not going to take much time, and that is the reason I ask for it.

Mr. Burr: It is not a matter of time. It is the multiplying of the exhibits. If I correctly remember the record in the pending exchange rate cases, the inventories of these poles jointly owned and used——

Mr. Shuler: But, if the Commission please, I can also further say Mr. Kositzky has further testified that the A. T. & T., through Mr. Rhodes, were the pioneers of this joint use. Now if we could have these appraisals we think we can refute that, and that is another reason why we [fol. 8959] wanted those appraisals, to show that the Independents in Ohio were the pioneers of the joint use, or at least had done considerable in joint use, ten years previously to 1910.

Mr. Gentsch: The record ought to show loud applause at Mr. Burr's objection to increasing the size of the record, having in mind the trunkful of stuff that he brought in here a few weeks ago.

Mr. Burr: That is true. The record is large already.

Mr. Shuler: I am not going to bring it in here. I am asking him to give us this information, is all. We would have been through this whole question at this time without the interruption.

Commissioner Poor: He may answer.

Q. Will you furnish us at your earliest opportunity that information?

A. What are the cities again?

Q. Will you furnish us the inventories at your earliest possible moment showing the total number of exclusive Bell poles and the total number of joint poles in Toledo, Akron, Dayton and Canton, and I would like to have them for Cleveland too, but you need not be so expeditious on it.

A. Those are in the record now; not in this record, but the inventories are matters of record before the Commission. That information is before the Commission.

Q. That inventory shows which are exclusively Bell poles and which are joint use?

A. Joint ownership. Joint use it wont show. You may [fol. 8960] have a joint use where one party owns the pole.

Q. If I am correct, joint use and joint ownership is the same thing, practically speaking?

A. So far as the use of the pole is concerned, yes, but so far as the records go it would be rather difficult to show what foreign attachments, as we call them, would be on a pole where we own 100 per cent of the pole.

Mr. Miller: Let me ask a question there to clear up something I have in mind. In the exchange inventories and appraisals, hasn't it been the policy of your company, Mr. Kositzky, to take the toll poles within the exchange area—to allocate those to exchange, and the toll poles outside of the exchange area to toll?

The Witness: That is, provided they were used by both exchange and toll—according to principal use, that is right.

Q. Mr. Kositzky, you are familiar with the former Ohio State property in the State of Ohio, are you not?

A. Yes, sir.

Q. Did you find that that Company had been practicing the joint use of poles with electric light, telegraph and other companies?

A. Yes.

Q. Will these inventories you spoke of show the former Ohio State and former Ohio Bell separately?

A. I doubt it.

Q. You think they would just show that they are Ohio Bell?

A. They are pretty much scrambled by the time the inventories are taken, but I can answer your question. There [fol. 8961] is a point there that I say is not clear. I mentioned Mr. Rhodes' N. E. L. A. report of 1910. Now I know

that joint use of poles has been in effect prior to 1900. My knowledge as to conditions in Ohio does not go back that far.

Mr. Burr: If Mr. Shuler is laboring under the mistaken idea that I think he is, these inventories referred to by Mr. Kositzky, Mr. Shuler, will show joint ownership and the portion of the ownership of the pole which is in the Ohio Bell Company, but they wont show separately or with any particular designation poles owned entirely by The Ohio Bell Telephone Company but probably jointly used by some other company without the other company having some ownership in the pole. In other words, where the Ohio Bell Company owns the pole outright, any other attachment of some other company which may be on that pole is there on a cont-act rental basis, or some such arrangement, and is not reflected in the ownership of the pole.

The Witness: Yes, that is right. The inventory would not show that.

Mr. Burr: Do you see what I mean? So it wont show perhaps what you are trying to get.

The Witness: To get that would be an awfully big job.

Mr. Kinnison: Wasn't it brought out that where there was not a joint ownership it was on a reciprocity basis and not a rental basis in the Canton case?

[fol. 8962] Mr. Burr: Not so far as I know. It may have been. I don't know.

Q. Taking Mr. Burr's statement or explanation in the record, what advantage is it to the Ohio Bell?

A. The advantage of having joint use of poles?

Q. Yes.

A. Considerable advantage.

Q. A very considerable advantage, is it not?

A. Yes, where all conditions are satisfactory.

Q. Now just explain it somewhat in detail.

A. The advantages?

Q. Yes.

A. As I explained in the exhibits a few weeks ago, there is, first, the question of safety, the question of lower capitalization, and one question which affects the company indirectly, the sightliness of the streets, for instance in the residential district.

Q. In other words, if the Ohio Bell had made a greater use of this joint use, you could have shown a considerably

larger saving than you do by your exhibit, isn't that true?

A. Oh, there is no doubt about it. It takes two parties, however, to make an agreement, Mr. Shuler.

Q. Is there any saving, Mr. Kositzky, in capitalization when the Ohio Bell owns the poles and another person connects to it?

A. Uses it you mean?

Q. Yes.

A. Yes, if the arrangements are reciprocal, I should say that there was mutual advantages.

Q. To what extent?

A. In another location perhaps the Ohio Bell would use the other fellow's poles so that it would save the investment of a pole for each company.

[fol. 8963] Q. Now, Mr. Kositzky, the real expansion in electric light construction in Ohio began approximately about 25 years ago?

A. I don't know. I think that is about right. Perhaps a little before that.

Q. And the expansion in the telephone business began approximately the same time?

A. I guess so. Before then, I would think; both of them ante-date that.

Q. Suppose, Mr. Kositzky, the Bell Companies in Ohio had begun their pioneering in joint construction of poles at the time of this early rapid expansion and kept it up all through, there might have been another item of savings to include in your schedule of savings, might there not?

A. I cannot say that they did not.

Q. If they had, there would be?

A. The policy has been, ever since I have been with the Company, to go joint, and wherever it is agreeable to the city and the light companies or the other companies involved, generally we have gone joint.

Q. But you have only been in Ohio for how many years?

A. I have lived here about three years and have had to do with Ohio since 1919, five years.

Q. You referred to phantom circuits and you figured savings in your schedule on account of phantom circuits, did you not?

A. Yes.

Q. Do you know when the phantom circuit came into use?

A. I think Mr. Rhodes testified to that, and he is more of an authority on it than I am.

Q. I am asking you for your knowledge.

[fol. 8964] A. It was in use at the time I started with the Telephone Company in 1905.

Q. So far as your knowledge goes, it has been 20 years approximately in use?

A. Yes, sir.

Q. Do you know that the phantom circuit principle was in use for telegraph purposes long before that?

A. Telegraph?

Q. Yes.

A. I don't think so. No, sir, I don't think so. I don't think the Telegraph Company are using phantoms even now for telegraph purposes.

Q. Don't you know that Mr. Edison used the phantom circuits in connection with telegraphy 40 years ago?

A. I think you are talking about multiplex telegraphy now, aren't you?

Q. What is multiplex telegraphy?

A. That is sending several messages over one wire.

Q. That is what——

A. That is not a phantom at all.

Q. But a phantom is making four wires out of two or six out of four?

A. A phantom creates one more circuit out of two.

Q. Right.

A. But multiplex telegraphy merely uses the circuit there and increases its capacity as we do now with carrier current. That is another matter altogether.

Q. Then your answer is that they never have to your knowledge and do not use the phantom circuit in connection with telegraphy?

A. No, sir. The physical characteristics of their wire even today will not permit that. They would have to re-[fol. 8965] arrange all their lines, retranspose them, and except in a very few cases where that has been done for telephone purposes by the railroads or telegraph companies, phantoms are not used for telegraph purposes.

Q. You speak also of the loop and trunk study in your direct testimony?

A. Yes, sir.

Q. You say that you found the Ohio State Company's

plant was designed and arranged very uneconomically and you mentioned larger wires than necessary in some places and in other places conductors too small, did you not?

A. That is right.

Q. Did you mean to confine your statement as to uneconomical design and arrangement to this matter of wires or conductors?

A. Both.

Q. Both?

A. Yes.

Q. And perhaps other things also?

A. It is mostly the arrangement of guages, kinds of circuits for various purposes.

Q. You have appraised some Ohio State plants for rate making purposes, have you not, Mr. Kositzky?

A. Indirectly.

Q. What do you mean by that?

A. In Ohio, Mr. Williams has been appraising the property directly, and I have just——

Q. Are you familiar with those appraisals?

A. In a general way.

Q. In connection with the appraisal of any wires that were larger or more expensive than necessary, did you [fol. 8966] appraise them as you found them or according to the proper economical design?

A. As we found them.

Q. As you found them?

A. In every case, yes, sir.

Q. And in connection with any wires that were too small for proper use, did you appraise them according to their usefulness?

A. No, sir, as they found them in every case. May I straighten out a point there, Mr. Shuler?

Q. Mr. Burr will have you do that.

Mr. Burr: If it is part of your answer, do it now. Mr. Shuler will permit that.

The Witness: In this loop and trunk study we did find wire in the Ohio State too large for its purposes; in other cases, wire that was too small; but in the rearrangement of the use of those conductors we put them to their proper use, and working them into the manner in which guages or wires of the various sizes could be most efficiently used.

Q. As you use them now do you mean to say that they are fully useful or that you have made the most possible use of what you found?

A. Well, take a specific example. In Toledo we found the trunk conductors were a little bit heavier than needed for certain grades of trunks and we extended the use of those to the grade of trunk and the class of trunk where those larger conductors are most suitable, and the new cables placed in Toledo were of a smaller guage and take the place of these larger ones, and the larger ones extended, as I stated, so that we are now working the plant, [fol. 8967] you might say, up into its proper subdivisions.

Q. You are getting full effectiveness out of those wires that are too large, are you?

A. Just as rapidly as we can work them over.

Mr. McConnaughey: The terms conductors and wires have been used in the last two questions. Is there any distinction?

The Witness: No, sir.

Mr. McConnaughy: Same thing?

The Witness: Yes, sir.

Q. What do you mean by as rapidly as possible? What determines whether or not you do make the change? That is the question.

A. If we have now trunks that are 19-guage between offices where a 22-guage trunk would be satisfactory, of course we do not immediately spend money to put in the 22-guage trunk and cut the 19-guage trunk dead, but if trunks are needed of a 19-guage character between two, say, more remote points, we will take and place a 22-guage trunk and transfer the use of that 19-guage, by extension if necessary, to the correct distances. In that manner we work the plant into its proper uses. Now we had a wonderful opportunity to do that both in Cleveland and in Toledo in connection with the unification, which required quite an addition of new trunks, and by rearranging the existing trunks in connection with the new work we were able to quite effectively and efficiently re-design or re-arrange the trunk cables.

[fol. 8968] Q. Is this going on quite rapidly or will it require five or ten years to complete it?

A. A great deal of that has taken place now.

Q. Now this expense of change, is that added to capital, fixed capital account, or plant account?

A. Yes, any new plant added goes to fixed capital. And re-arrangements——

Q. Well, now,——

Mr. Burr: Let him finish his answer.

The Witness: And any re-arrangement, of which there is always a minor amount in connection with any new work, that is charged to maintenance.

Q. And labor in connection with that would be added to capital?

A. If it is a capital expenditure, yes, sir.

Q. You stated that there were in Cleveland in 1921, 30,000 Ohio State telephones, did you not?

A. I believe so, yes, sir.

Q. How many are there today?

A. Not very many. I haven't the exact figure.

Q. In your record you said four or five thousand?

A. I think there is less, if anything, today. We lost about 800 the last two months.

Q. Now by that you mean instruments and not subscribers?

A. I mean Ohio State telephones, telephone subscribers connected with the Ohio State plant and getting only service over the Ohio State exchanges.

Q. So that does not mean that there are only 5,000 Ohio [fol. 8969] State instruments in service in Cleveland today?

A. No.

Q. Do you know about how many instruments are in service in Cleveland today?

A. I do not.

Q. You stated that there are about 100,000 Ohio State subscribers—you state that there were about 100,000 Ohio State subscribers. To what time does that refer?

A. I really don't know. There were about 125 or 30 I think in 1921.

Q. About 130 in 1921?

A. Yes, sir.

Q. At the time of the consolidation?

A. Yes, and I don't know how many there are today, but there are less than 100,000, I believe, considerably less.

Q. Do you know what the Ohio State property was appraised at at the time of the consolidation in 1921?

A. I do not.

Q. In the consolidation of the physical properties won't you lose a good many more of the telephones, particularly those that were duplicated, those that were duplications?

A. Why, no doubt there will be some additional loss. Many of those, you know, go from the State plant to the Bell plant, and in the majority of cases the property goes with it; the cables, conduits and so on are now quite generally used for subscribers connected with the Bell exchanges.

Q. Have you any knowledge as to the average book cost of the Ohio Bell property per telephone at the time of the consolidation in 1921, excluding the Ohio State?

[fol. 8970] A. No, I do not.

Q. Do you know the per station average for the entire Bell system?

A. Oh, just approximately. About $160.00, I guess, something like that.

Mr. Gentsch: Does that mean all over the United States?

The Witness: Yes.

Q. Do you know the book cost of the entire Bell System throughout the United States, per telephone?

A. Well, that is what I mean; about $160.00, I believe; I don't know the exact amount. It may be a little less.

Q. You say that the A. T. & T. or the American Company developed a copper steel twisted pair wire. Will you please tell us just what you mean by that statement?

A. That is the steel core with the copper coating and insulated, two wires twisted in pairs, used for drop wire. Is that what you mean?

Q. That is the reason we have asked you the question?

A. That is what I had reference to.

Q. Because of your language in your direct examination.

A. That is what I had reference to, a copper clad twisted wire; what we know as the 17 C. C.

Q. When was that done by the A. T. & T.?

A. I don't know exactly, but it was recommended for use to the asociated companies, if I remember, since 1905.

Q. Since 1905?

A. Or 1809 or '10, along there.

Q. You mean 1909 or '10?

A. Along in there, yes, sir.

[fol. 8971] Q. What do you mean when you say they developed it? Do you mean that they recommended it to the Associated Companies for use?

A. Yes.

Q. Then you don't know anything about what they did in the way of development?

A. Well, they have——

Q. No, I am asking for your knowledge?

A. No, I don't know anything about the details of it.

Q. Roebling is a large manufacturer of wires and cables, are they not?

A. Yes, sir.

Q. Standard Underground *are*?

A. Yes, sir.

Q. Do you know what they have done towards the development of this wire?

A. I believe that these companies did develop or recommend for use the bare steel wire copper clad, but the twisted pair wire I have reference to was used by the Bell Companies before the Independents, to my personal knowledge.

Q. But you don't know who developed it?

A. My information is the A. T. & T.

Q. What was the development that they did, from your information? Now I am asking you for your personal knowledge, Mr. Kositzky?

A. Well, I don't know just what happened in the laboratories, but they sent out the specifications and recommended its use, and the Bell Companies were the first to use that wire, and if the A. T. & T. had not recommended it—at least it was through their recommendation that we started using the wire.

Q. That is right. Now, so far as you know, the American Company recommended it for use to the Associated [fol. 8972] Companies and they used it?

A. After thorough experimentation and finding that it was really satisfactory.

Q. What was the development of it? What do you mean by development of it? Anything more than the American

Company recommended it for use to the Associated Companies?

A. I presume that way—I don't know.

Q. If in your statement of savings you say anything about that particular item it should be withdrawn from the statement because you don't know that the American Company did develop it, is that right?

A. My best information is that they did develop it. I was not with the A. T. & T. and am not familiar with the processes of their organization. It may have been developed in conjunction with the Western Electric Company for all I know.

Q. You say your best information is that they did develop it. Now I have asked you what you mean by the words "develop it". You say you don't know.

A. When you ask me about poles, I don't know.

Q. What was this development then? Let us get that. What was the development that we have been talking about? It was not the putting of the copper on the outside of a steel wire, was it?

A. No. I know that they conducted experiments as to the manner in which a steel core wire would tie up into these knobs or fasteners on buildings and as to how it would stand up under different conditions. Experiments of that kind were conducted by The American Telephone & Telegraph Company. I know that.

Q. Was there ever the slightest restraint on the use [fol. 8973] of this wire by independent companies?

A. I don't know.

Q. Now you state that the difference between 14 copper and 17 copper clad wire is about $1.13 a foot in place?

A. Yes.

Q. For the materials?

A. Per hundred foot in place for labor and material.

Q. But your statement was $1.13 a foot in place for the labor and material; do you wish to correct that statement?

A. It is a cent plus per foot in place, or a dollar plus per hundred feet in place.

Mr. Burr: Do you know at what point in the record that statement appears?

The Witness: 1188. That should be corrected. That should be 1.13 cents per foot in place for labor and material.

Mr. Burr: Let the record stand so corrected.
Commissioner Poor: It may be so corrected.

Q. Now, Mr. Kositzky, you don't know as a matter of fact whether or not in Ohio the Independents had not been using this wire previous to its recommendation by the American Company, do you?

A. I don't know.

Q. Do you know whether the Ohio Bell or the Bell Companies in Ohio had been using it before its recommendation by the American Company?

A. All Bell Companies I know did not start using it at the same time.

Q. What is it?

A. All Bell Companies did not start using it at the same time. There was not certainty in the minds of some [fol. 8974] companies whether they should use it or not.

Q. Please answer my question. That is not my question. You have been in Ohio for five years. Do you know whether or not the Bell Companies in Ohio used this kind of wire previous to its recommendation by the American Company?

A. I do not.

Q. Now, as a matter of fact, this development or improvement you are speaking about all the time is simply the placing on this kind of wire just the same as they would put insulation on other kinds of wire; isn't that right?

A. That is one of the things, yes.

Q. What kind of wire was it substituted for?

A. Mostly the No. 14 copper, pure copper, and in some instances what we call a single conductor K. K. wire; and in other cases there was a No. 12 copper.

Q. Did you make this appraisal of the Ohio Bell or the Ohio State exchange in Dayton, Mr. Kositzky?

A. No, sir.

Q. Have you ever seen it?

A. Yes.

Q. Did you ever check it?

A. Not in detail.

Q. Well, I will show you this Dayton State Exchange appraisal, page 50, as to whether or not there does not appear on that page, No. 14 B. & S. guage twisted pair copper, mile, $135.97; does that mean per mile unit cost?

A. Yes, sir.

Q. That is the per mile cost of that kind of wire then, is that correct?

A. Yes, sir.

[fol. 8975] Q. And No. 17——

A. Wait a minute.

Q. And No. 17 Brown & Sharpe or B. & S. guage twisted copper is $98.19 per mile?

A. Yes, sir.

Q. Now these are the two items that you compare in pricing your exhibit, are they not?

A. Yes, sir.

Q. And the difference between the two in this appraisal is —I am going to let somebody do the mathematics—$37.77; is that correct?

A. Per mile?

Mr. Burr: What is that amount?

Mr. Shuler: $37.77 plus; that is right, isn't it?

The Witness: I did not divide it out.

Q. Do you want to check me on it?

A. I will take your word for it.

Q. I wish Mr. Rhodes had.

Mr. Burr: You would have had a better record if he had.

Q. How much is that per hundred feet?

A. I will have to figure it out. About 70 cents in round numbers.

Q. I got it 71. That is all right. Now, Mr. Kositzky, how do you account for the difference between $1.13 a hundred feet, as stated in your direct examination, and 70 cents, as stated by you now?

A. They are entirely different price levels. Mr. Williams used a five year average, a five year mean, while I used current cost.

Q. You used what?

A. Current cost.

Q. That is, you used today's cost?

A. And then those figures of Mr. Williams you notice all overheads are in another part of the inventory al- [fol. 8976] together and I have this cost with the indirect as well as the direct costs.

Q. You have added overheads in your cost?

A. Yes.

Q. How much?

A. I haven't the details here.

Q. What per cent, 21 or 22 per cent?

A. Say 20 per cent. The price levels are about 25 per cent different so that accounts for the difference.

Q. Now what would be the difference in the price levels, do you know?

A. About 25 per cent.

Q. When were these cables or wires put into service by the Companies?

A. I do not know.

Q. Do you think it is fair to show the saving at the present high prices if it was put in in the past at low prices?

A. I think so.

Q. You do?

A. It shows the savings today.

Q. Then if ten years from now prices should be 100 per cent higher the company would have saved 100 per cent more, if you were figuring it in a similar case?

A. Whatever the plant would be at that time, yes.

Q. And if in ten years from now the prices would be less, I suppose you would use the figures existing at the time the cable or wire was put into the plant?

A. Yes, sir, we would have to be consistent.

Q. Now, Mr. Kositzky, in all your savings you have used present-day prices in your estimates?

A. Yes, sir, that is right.

[fol. 8977] Q. Now, Mr. Kositzky, you say you have added about 20 per cent for overheads. What per cent of that 20 per cent would represent engineering?

A. Five.

Q. Whatever engineering was done in putting in the other kind of wire would be the same engineering that would be used in putting in the wire you are speaking of; isn't that right?

A. No, our engineering runs five per cent on the expenditures of the plant.

Q. Mr. Kositzky, if you will answer my questions we can——

Mr. Burr: He did answer it.

Mr. Shuler: No, he did not. I asked an entirely different question.

(Question read.)

Q. My question simply means this; you substituted a wire for another wire; is that correct?

A. That is right.

Q. Now the engineering on the first one would be no different from the engineering on the other?

A. Strictly theoretically, no, but practically it would be.

Q. Why?

A. Because our engineering is a certain amount of our total expenditures.

Q. You mean that is what you estimate——

A. If the expenditures are more, the engineering is merely a percentage of the expenditures.

Q. In your appraisals do you estimate your engineering expenses at what they were in the actual construction of the plant?

A. No, sir.

[fol. 8978] Q. Nor have you done that in making an estimate of these savings?

A. No, sir. We take the experiences—recent experiences,——

Q. No, just answer my question. Is it a fact, Mr. Kositzky, that this kind of wire is put into plant as it is actually used and usually in short lengths?

A. Generally, yes.

Q. Then where is the engineering expense connected with that of five per cent?

A. That gets its accustomed loading of overheads; that is strictly according to our accounting rules as prescribed by The Interstate Commerce Commission.

Q. That is true; it is merely a loading.

A. It is a cost. It is an allocation of costs.

Q. You used the word "loading".

A. Loading and overheads are the same.

Q. Now you have added an expense of taxes during construction in your savings, have you not?

A. That is right.

Q. Do you know that as a matter of fact there were any taxes added during construction?

A. You are talking about the original cost?

Q. The substitution.

A. In reproduction there would be, yes.

Q. In reproduction there would be, yes, but you are not giving us an appraisal. You are trying to show us what is saved by the Associated Companies in this substitution?

A. If this property were reproduced today, under the con-
[fol. 8979] ditions under which it would have to be built if these savings and developments were not available.

Q. Would there be any appreciable interest during construction because of the change in the wire?

A. Certainly, greater capital expenditure, more money involved.

Q. Now, Mr. Kositzky, as a matter of fact, can you imagine that the engineering of copper wire actually costs more than the engineering of copper steel wire?

A. I think I have answered that question.

Q. Then you answer that there is a difference?

A. Engineering is a matter of value——

Q. Now wait a minute; just answer my question. What is the difference in engineering in placing copper wire and engineering placing copper steel wire?

A. Just as I answered, theoretically there is no difference, but practically there is a difference, and on the books—on the way it is charged on the books.

Q. Well, now, let us put the question this way. What do you mean when you speak of engineering in regard to the placing of this wire?

A. I can only answer that this way, Mr. Shuler, that we have a certain engineering bill of expense in the State of Ohio, or in connection with the engineering of any property. That engineering is limited to the various items that go into that property, wire, as well as conduit, buildings, cable and everything else. As to engineering on any particular item, I cannot answer that.

Q. Now, Mr. Crunden distinguished between the engineer
[fol. 8980] and the accountant in these matters of depreciation, etc. Are you speaking now as an accountant or as an engineer?

A. I was trying to tell you how the engineering expense is spread to the various items that go into the plant.

Q. Then you are speaking as an engineer?

A. That is the way the engineering expenses are distributed.

Q. Now, listen, Mr. Kositzky; you have tried to show a saving in the use of this wire that the company made, have you not?

A. Yes.

Q. And you are not appraising the property for a rate basis?

A. I am trying to show the savings, Mr. Shuler, if you had to reproduce this plant, with the kind of plant that we were using prior to the development of these things that we have said were made by the A. T. & T. Company, the property as it stands today.

Q. Right.

Mr. McConnaughy: May I ask a question then?

Mr. Shuler: Yes.

Mr. McConnaughy: Mr. Kositzky, you have explained the difference of price between you and Mr. Williams on the basis of the fact that Mr. Williams used a five year average and you have used present-day prices?

The Witness: Yes, sir.

Mr. McConnaughy: Which is 25 per cent more?

The Witness: Approximately, yes.

Mr. McConnaughy: If you added 25 per cent more to the cost of the 14 wire, that is 25 per cent of the $98.19, that [fol. 8981] would be $122.747, if my mathematics are correct?

The Witness: Yes, sir.

Mr. McConnaughy: If you add likewise 25 per cent to the cost of the 17 wire as shown in the Williams exhibit that would be $33.992 increase, making the cost of the 17 wire $169.963 per mile?

The Witness: I think that is alright.

Mr. McConnaughy: Now that difference would be $47.216 instead of the $37.773; isn't that correct?

The Witness: That is probably right; I don't know.

Mr. McConnaughy: So that the 25 per cent increase or the difference in the cost basis would not account for the difference between the 70 cents and the $1.13 that you spoke of?

The Witness: Probably not. I am not responsible for Mr. Williams' units. Those are my own that I am giving now. There may be a difference of opinion as to his units.

Mr. McConnaughy: Where did you get your units?

The Witness: From my own information.

Mr. McConnaughy: Did you get it from the experience of the Company, as did Mr. Williams?

The Witness: His experience I think is primarily an experience for a period of years, I think 15-19, or thereabouts, and mine, as I am able to determine it, current costs.

Mr. McConnaughy: You got your information, however, from the records of the Company, as he did?

[fol. 8982] The Witness: Not necessarily; it is a matter of judgment. Costs are not necessarily reflected entirely by the experience—the records of the Company. It is a matter of judgment as well as experience.

Mr. McConnaughy: Will you put into the record exactly how you did arrive at these costs and this difference in price?

The Witness: You want me to justify Mr. Williams' figures?

Mr. McConnaughy: Justify your own figures.

Mr. Shuler: The data as to how you arrived at your own figures.

The Witness: I took the material as it is billed to the Telephone Company, as I say, at the first of the year—that is about when these figures were compared; to that I added the supply expense, the freight; the supply is the warehousing, freight, etc.; and arrived at a material price f. o. b. Ohio.

Mr. McConnaughy: You said $1.13 in place.

The Witness: That is material. The next is the labor of stringing the wire. You have either short lengths or long lengths. This is mostly in drop wire. You have the cost of the labor plus the direct cost, all direct expenses. That is the labor item. And there is the cost of the incidentals, such as the trucking, the trucking in connection with the gangs that are placing the wire, and that, reduced to a common unit, such as per foot, is the manner in which I arrived at these figures. I think it is 4½ cents for the 14 [fol. 8983] and three and a fraction for the No. 17.

Q. Mr. Kositzky, following up just one question, you certainly have the data somewhere giving you that result?

A. Yes, sir.

Q. Can you give it to us for the record later on—not now?

Mr. McConnaughy: No, get it now.

Mr. Shuler: Do you want it now?

Mr. McConnaughy: Yes, sir; what is the use of putting it off? He has got it.

Q. Alright, give it to us.

A. I haven't all of the details here. Suppose I give you those later?

Q. What is it, Mr. Kositzky?

A. I haven't all of the details here. I will have to give you that a little later.

Q. How much can you give us, Mr. Kositzky, now?

A. I just have the amount of wire.

Q. Give us what you have and then you can give us the balance later.

A. The No. 14 copper was 4.45 cents per foot; 17 copper clad 3.32 cents per foot; and there is a total in exchange plant of 106,858,458 feet of this 17 copper clad wire, and the difference is $1.13 per foot. Multiply that by the total number of feet, gives a saving of $1,208,670.00 in first cost; and annual charges applied against that of 31 per cent, made up of interest——

Q. How much per cent?

A. 31 per cent.

Q. What is the interest per cent?

A. Interest at 8; taxes 2; administration 1; depreciation [fol. 8984] 15; maintenance 5; gives a total of 31; and that applied to the first cost difference would be an annual saving in annual charges of $374,688.00.

Q. That is all of the details you have?

A. Yes.

Q. You have no details of the 4.45 and the 3.32?

A. No, sir.

Q. You will get those?

A. I can give you those, yes, sir.

Q. Now, Mr. Kositzky, if you are to estimate these savings on the basis that the Ohio State did get that wire without the A. T. & T., and assume that the Bell Companies could have gotten it likewise, then the whole item of saving would be cut out, would it not? Do you understand the question?

A. I think I do. In other words, if the A. T. & T. had not developed this wire and took no responsibility for the wire, there would not have been that saving?

Q. Well, answer it that way now.

A. I suppose not.

Q. Now, Mr. Rhodes and others I think have testified that this wire was available to the Independents as well as to the Associated Companies, and I asked you, that being true, then the item of savings should likewise be cut out?

A. I do not think so. It is not a patented article, and it is something that any one could copy, and if Roebling and Standard and these other cable and wire manufacturers

copied the product developed by the A. T. & T. and the Western Electric Company, I do not know why that should [fol. 8985] minimize the value of this work to the telephone industry.

Q. Supposing, on the other hand, that the Roebling or the Standard Underground put it out first?

A. In its present form, 17 C. C.?

Q. When was that put out?

A. I said since 1905.

Q. Since 1905?

A. Yes.

(Question read.)

Mr. Shuler: Strike out "put it out first", and put in "17".

The Witness: Copper clad?

Mr. Shuler: Why, yes.

The Witness: Well, they did not. It first came to us from The Western Electric Company and the A. T. & T.

Q. Do you know whether it went to Independents before it came to you?

A. Not the Independents that were operating in the field that I was working in.

Q. Now answer my question as I have put it. If it is not the truth, that is one thing. It does not hurt you. If it is the truth, it does hurt you.

A. That is right.

Mr. Shuler: Now put my question and you answer it.

(Question read as amended.)

Q. And it was available to Independents, then should not this item of saving be eliminated?

A. If the Roebling people developed it, still the development may be credited to the Western Electric Company.

Mr. Shuler: Might I not have a yes or no answer to that question? I think it is a perfectly proper question.

[fol. 8986] Commissioner Poor: I do not think the answer has been responsive to the question that has been asked.

Mr. Burr: Why, the question has been added to and taken away from until I don't believe anybody knows what the question is. Even the last time the question was put an addition was made.

Mr. Shuler: Will the stenographer read it?

(Question read as amended.)

The Witness: If you will say "Put out and developed", I will answer that yes.

Mr. McConnaughy: No.

Mr. Kinnison: I object to that. Strike out the word "development".

Q. I want a yes or no answer to my question.

A. No, if you want it that way; I will give you the answer no.

Q. Now, Mr. Kositzky, what is this development that you are speaking about that the American Company made?

Mr. Gentsch: He said he did not know.

Q. Can you answer that question, Mr. Kositzky?

A. It is the application of the coppered steel wire to the distribution use. That is, pairing it and insulating it the same as the No. 14 copper wire was formerly treated and used.

Q. In other words, it was applying to this copper wire the same treatment that had formerly been applied to another wire?

A. That is right, with instruments and so on, to make certain it would stand up and be serviceable.

[fol. 8987] Q. What was done by the American Company to make it stand up and be serviceable?

A. Subjected to laboratory tests.

Q. What kind of laboratory tests? What kind of laboratory tests was this subjected to?

A. I haven't seen the actual testing but I have seen the laboratories and I know about what the tests are; merely a bending test to see if the insulation would have the same resisting powers; also to see if the wire, which is of a little smaller diameter, would cut through the insulation. This type of wires is usually tied around knobs where it attaches to poles and buildings—to see whether it would tie or not without breaking, and a number of tests of that character.

Q. What things were subjected to these tests?

A. What do you mean by "what things"?

Q. You say it was subjected to certain tests and I want to know what was subjected to the tests?

A. We have an abrasion test.

Q. What was subjected to that?

A. This wire, this insulated wire.

Q. Well, go on. What other tests and what things were subjected to them, can you tell us?

A. That is about all I know about the wire.

Mr. Kinnison: Mr. Kositzky, those tests you speak of do not constitute a development, do they?

The Witness: No, sir, it don't cost us to develop that——

Mr. Kinnison: No, I say do not constitute a development?

[fol. 8988] The Witness: I think so. That is part of the determination of whether or not a wire of that character can be used for this purpose.

Mr. Kinnison: It did not add to the properties of the wire or in any way develop any process of application; you just tested it to see whether it was presently available or not, didn't you?

The Witness: Just tested to see whether the wire would be suitable for this purpose.

Mr. Kinnison: You did not develop it?

The Witness: We did not develop it. It was done by the A. T. & T. and Western Electric Company.

Mr. Kinnison: I mean to say, those tests in themselves do not constitute a development of the wire?

The Witness: Technically, perhaps not, but it all has to do with the application of the proper kind of wire of that type to this purpose.

Mr. Kinnison: Actually what you were trying to see was whether or not it was desirable and you did not have to add to it to make it available?

The Witness: I don't know the details. It was years ago and I cannot answer as to those details.

Q. Now, Mr. Kositzky, you testified, or you took into account a 15 per cent depreciation on this twisted pair copper steel wire, did you not?

A. Yes.

Q. What did you mean by that?

A. That this wire has a shorter life; it only lasts a very short period.

[fol. 8989] Q. How much?

A. I don't know exactly; probably seven or eight years.

Q. You don't know exactly? Then why did you take 15 per cent?

A. Because that is the result of our studies as testified to by Mr. Schneider.

Q. Now, Mr. Kositzky, what is it that shortens its life to seven or eight years?

A. Why, various things. The weather-proofed wire does not stand up as long and the wires being in contact with only the insulation as a separation it breaks down the insulation. In many instances they go through trees and the abrasion from trees has its effect.

Q. Mr. Kositzky, didn't you ever read your circular on How to Prune Trees?

A. Would you want some one to prune the trees in your yard?

Q. This is a weather-proofed wire that you are talking about?

A. Yes. A telephone has a very short life in one particular location; they are moved rapidly, and the wire of course is not in one locality on the average very long on account of its removal because of these changes.

Q. But, Mr. Kositzky, you often leave the wire on for some period afterwards on the theory that some one else will move into the house?

A. That is right. All those things taken into consideration gives us a depreciation of 15 per cent for this particular wire.

Q. Just the things you have mentioned?

A. Yes, sir.

Q. Now if this wire is exposed to the weather for seven years, in your opinion then it is useless?

[fol. 8990] A. I did not say that. A particular wire otherwise well protected, that is from abrasion and so on, and allowed to remain in one place, may remain 12 to 15 years. I am speaking of averages.

Q. Your thought is that all your wires, taking into consideration that a certain percentage of them sufficiently large, are within trees not pruned according to your instructions from the American Company and other places where abrasion occurs, is that right?

A. That is right.

Mr. Burr: Read that question.

(Question read.)

Mr. Burr: There isn't any question there at all.

Mr. Shuler: Then I will make a question.

Mr. Kinnison: The witness seemed to understand. He did not get the shake of the head that time.

Q. What percentage of these wires in a plant are located where abrasion shortens their lives?

A. I don't know.

Q. Then how can you use that as a factor to determine its shortened life due to abrasion?

A. We know it happens. We know that wire strung to be perfectly clear of foliage, the foliage will grow into the wires. We haven't a battery of men out watching these trees and pruning trees. It would cost us more than it would to replace the wires when the damage does occur.

Q. Now supposing the insulation is worn off by abrasion through a tree, how much wire do you take down and replace?

A. The entire drop from the pole to the house.

[fol. 8991] Q. From the pole to the house?

A. Yes, sir.

Q. Is all of the wire of which you have spoken drop wire?

A. I should say about 90 per cent of it.

Q. That is 90 per cent of all the wire you have calculated upon to show your saving is between the pole and the house?

A. No, drop wire from the terminal to the house.

Q. Where is the terminal?

A. It may be on the pole nearest the house, or it may be one or two poles from the house.

Q. It does go from the pole to the house?

A. Yes, and from pole to pole.

Q. Yes, that is true. From pole to pole do you get much abrasion?

A. Oh, yes, trees between poles, yes.

Q. When the wire is exposed to the weather you think it will last for 15 years?

A. Weather only?

Q. Yes, weather only?

A. I don't know. I said about 12 or 15 years.

Q. And the reduction to seven year life is due to the loss from abrasion?

A. Storms, removals, because of subscribers' wishes or our own, changes in the plant wiring, and so on; dozens of reasons.

Q. But the property is not lost when you take it down from one house, is it, to another?

A. Yes, sir.

Q. Don't you use it another place?

A. That is the period I am talking about, left in one location.

Q. But not the actual service life of the wire?

A. You are talking of the wire? No, this is the material [fol. 8992] in place.

Q. You are talking about 15 per cent for depreciation because wire, according to your experience, lasts in one location on the average seven years?

A. That is about right.

Q. Now have you got the details of your Exhibits 31 and 32.

A. What are those, please?

Q. Estimated savings for The Ohio Bell Telephone Company due to certain items of development work carried out by the General Engineering Staff of The American Telephone Company,—31; 32, Estimated Saving for The Ohio Bell Telephone Company due to certain items of development work carried out by the General Engineering Staff of the American Telephone Company.

A. Yes, sir.

Q. Will you give us those? Take 31, Line 1?

A. Lead antimony sheath cable—31 or 2?

Q. 31.

A. That is fine wire cables, excepting 900 pair 22-guage and all sizes of 24 guage cable including ducts.

Q. Give us the details of that?

A. That is divided into four items, the aerial cable, underground cable, submarine cable and saving due to ducts.

Q. Yes. Now the details of it?

A. Now there are 13,129,288 feet of aerial cable. Savings per foot of 22-guage over the cost of 19-guage is 22 cents.

Q. Now that is at present-day prices?

A. That is right.

Q. Right.

A. That gives a current cost saving in first cost of aerial [fol. 8993] cable of $2,929,869.00

Q. What was that price you used?

A. Current cost prices.

Q. I know, but what was it?

A. You mean the details? Well, now, there are a dozen or more sizes of cable and lengths, is that the detail you want?

Q. Yes.

A. Well, I haven't all that with me. I have just reduced it here to broad units and the general units.

Q. You haven't the details at all anywhere?

A. Yes, we have got the details from which all of these were developed, yes.

Q. That is what I mean.

A. I haven't them.

Q. Where are they?

A. Cleveland.

Q. When could you get them for us, Mr. Kositzky?

(No reply.)

Q. Well, give us what you have, Mr. Kositzky.

A. The annual charges of aerial cable is 20 per cent, made up of 8 per cent interest, 2 per cent taxes, 1 per cent administration, 5½ per cent depreciation, 3½ per cent maintenance, making 20 per cent. That gives a saving in annual charges of $585,974.00.

In underground cable there are 4,143,047 feet, and the saving in underground cable is, of 22 over 19, 82 cents per foot of cable. That gives a current cost saving of $3,395,-366.00, and the annual charge applied to that is 15.68 per cent, made up of, interest 8 per cent, taxes 2, administration 1, depreciation 3.38, that is the composite, taking [fol. 8994] the main and subsidiary, and maintenance 1.3. That gives the saving in annual charges of $532,393.00.

Then there is a small amount of submarine cable, only 819 feet; a current cost saving of $1298.00; annual charges $337.00.

Where the cables of 22-guage are larger than 300 pair, 300 pair being the maximum size of 19-guage cable, it would require two cables, and where these are underground cables require addition- conduit, and there are 3,300,928 duct feet of additional conduit that would be required.

Mr. McConnaughy: Why is that additional conduit required? I don't get it.

The Witness: In this way, Mr. McConnaughy. A 600-pair 22-guage cable, if it were only 19-guage, would require two

cables, because the 19-guage cable of maximum size is 300 pair.

Mr. McConnaughy: That is the cable itself would be larger?

The Witness: It would be larger than the capacity of the duct, so that it would require two ducts. In the State of Ohio, for every occupied duct there are about two ducts, emergency ducts, a duct required for the city and then for growth, and a conduit plant is but 50 per cent in use. For this cable there would be about two additional ducts. For the conduit then the first cost would be $3,088,255.00, and the annual charges applied to that of 14.1 per cent, interest 8, taxes 2, administration 1, depreciation—that is composite for the main and subsidiary—2.6, and maintenance only a [fol. 8995] half of one per cent, a total of 14.1 per cent, which would give a saving in annual charges of $435,444.00; or give a total first cost saving of $9,414,788.00 and an annual charge savings of $1,554,148.00.

Q. Now, Mr. Kositzky, on that point, does that total amount you have given us of wire mean only the amount of that kind of wire that you have calculated?

A. Yes, sir, of cables, excluding the 900 pair and all sizes of 24-gauge. This is merely 22-gauge up to 900 pair.

Q. It does not include any 19-guage steel in use by the Company?

A. Oh, no.

Q. Does not insulate any of that?

A. No.

Mr. McConnaughy: What are your quantities? Is it the total amount in place or the amount that has been put in place since these changes were effected?

The Witness: That is the total amount in place today.

Mr. McConnaughy: Oh, my goodness, that is not the basis. You mean if this plant had been constructed according to these new methods, it would cost this much less, the whole plant?

The Witness: Let me make myself clear. If the 22-guage wire had not been developed, to get the same equivalent of wire in cables and conduit we would have to have an investment greater by $9,414,000.00, than we have today on current cost prices.

Mr. McConnaughy: You have not saved this amount then;

this is purely a theoretical saving? That plant would have [fol. 8996] cost this much if you had used——

The Witness: It would have cost this much more if we had not used this kind of equipment.

Mr. McConnaughy: In your entire plant?

The Witness: Yes, sir.

Mr. McConnaughy: Why, that is funny.

Q. Have you got any more detail on that?

A. That is all.

Q. How about Line 2?

A. That is the 900-pair 22-guage and all sizes of 24-guage cable. In other words, if the 900-pair 22-guage cable had not been developed or the 24-guage wire in cable had not been developed, and using, say, the 22-guage cables commonly used up to this time instead, it would have involved an additional investment today of this $1,323,699.00.

Q. That is a saving not as against the 19 wire but as against the 22-guage?

A. That is right.

Q. Now have you got the details?

A. There are 393,127 feet of aerial cable of the 24-guage type and the difference between the 24 and the 22-guage wire in cable is 13 cents per foot. That, applied to this amount——

Q. Just a minute. Again, are both of those priced at present-day prices?

A. That is right.

Q. But you have not the prices you have used?

A. Not in detail.

Q. You have them somewhere, haven't you?

A. Yes.

Q. Will you get those?

A. If you want them.

Q. Go ahead.

A. That would be 13 cents per foot applied against this [fol. 8997] quantity, $52,532.00 first cost; apply to that an annual charge of 20 per cent—being the same as the other item—$10,506.00. There are 780,149 feet of 900-pair 22, or 1200-pair 24-guage cable.

Q. Mr. Kositzky, another question right along there. All your estimates of savings are based on reproduction new at present-day prices?

A. That is right.

Q. Not based on the way the wires were actually placed into the plant by the company?

A. No, that is a condition as of today that I am giving.

Q. Now if it were based at the time and in the way they were actually placed by the company it would not be so much, would it?

A. No.

Q. Because you would not have overhead expenses as you do in a cost new?

A. You would still have overheads.

Q. Yes, but the engineering and all of that would have been done by the company's force which they had and were paying for, is that right?

A. The same as it is done today. I do not see any difference.

Q. All right; go ahead.

A. The difference of cable, of the underground cable, between the 900 22-guage and the 24-guage over 22-guage is 68 cents per foot. This, applied to the 780,000 plus feet, gives a first cost item of $535,900.00; and the annual charges of 15.68 per cent applied to that, being made up the same as in the former item, was $84,029.00.

Again, in the underground, there is a duct saving as a 1200-pair requires but one duct, and the 600-pair would [fol. 8998] require two ducts. and the same way with the 900-pair. And I assume that two 900-pair cables now requiring two ducts, if in 600-pair would require three ducts, and allowing again for the surplus ducts there would be a duct saving of 785,903 duct feet, or a current cost saving of $735,269.00; and annual charges applied against that of 14.1 per cent would give an annual cost saving of $103,673.00; or a total first cost saving of $1,323,699.00 and an annual cost saving of $198,208.00.

Q. You said, I believe, in answer to a question a while ago, that these savings were based on reproduction new at present-day prices?

A. Yes, sir.

Q. But that you have not with you the prices that you used?

A. All of the details, no.

Q. Line 3?

A. Line 3 is the introduction of lead antimony cable sheath in place of what was formerly lead tin alloy. And

I want to make a correction in the record. I believe I gave the figures incorrectly to the stenographer or they were—at least they are not right in the record as to the metal prices. It does not change the answer, however. The record shows antimony at 8¼ cents a pound; it should be 10½.

Q. At what page?

A. Page 1187. It shows lead at 10½ and it should be 8¼. In other words those two metal prices are just reversed. The tin price is alright. And the difference shown in the record on Page 1187 of $1.29¾ should be $1.32.

Mr. Burr: May I interrupt you one minute? I think Mr. [fol. 8999] McConnaugh-y has an idea that your savings are calculated on the basis of substituting for all cable in the plant the 22-gauge cable; is that correct?

The Witness: Not all cable, no. Just that cable which is now 900-pair 22-guage and 24-guage, substituting 22-guage cable for that.

Mr. Burr: In other words, you are only figuring the savings on part of the plant, that is the smaller guage wire?

The Witness: Yes, that is right. It is practically the same as Mr. Rhodes testified to for the United States as a whole. There is no difference only I applied it to just the State of Ohio.

Mr. McConnaghey: Mr. Rhodes used the purchase of new material since these different changes were put in effect. Now I understand that you have taken the plant in all of these different departments as it exists today and have refigured the thing as if it were constructed with these improvements?

The Witness: I am not sure what costs Mr. Rhodes applied, whether current or original costs.

Mr. McConnaughey: It is not a question of costs but a question of quantities that I am concerned about. What are the quantities of these different materials that you have used?

The Witness: It would be the same as the purchases only we get this from our inventories. In other words, the 22-gauge cable that is now in the plant under the sizes I have [fol. 9000] mentioned, of 900-pair and 24, and substituting for that a 19-guage wire cable, would increase our investment by this amount and the carrying charges by the amount I have stated.

Mr. McConnaughey: Alright.

The Witness: Now there are of the lead antimony alloy sheath cable in the State of Ohio 6,157,655 feet of aerial cable, 3,417,578 feet of underground cable, and the pounds of sheath computed from knowing the weights and the sizes is 7,486,278 pounds for the aerial, 13,051,562 pounds for the underground, or a total of 20,537,840 pounds. Now where there was formerly used three pounds of tin and 97 pounds of lead, that is to every 100 pounds of sheath, there is now used one pound of antimony and nine pounds of lead. In other words, three pounds of tin were replaced in the antimony sheath by two pounds of lead, and one pound of antimony. The tin costs 53 cents a pound, or, for the three pounds, $1.59.

Q. As of what date?

A. Current costs as about the first of the year. And the two pounds of lead and the one pound of antimony which now take the place of three pounds of tin at 8¼ cents is 16½ cents, and one pound of antimony at 10½, or a total of 27 cents. In other words, the alloy now costs 27 cents for the three pounds which replaced the $1.59 worth of tin, or a saving of $1.32 per hundred pounds of sheath; applied against 20,000,000 pounds gives a saving of $271,100.00.

And thereupon a recess was had until 1:30 o'clock P. M. of same day, Wednesday, April 23, 1924.

[fol. 9001] Wednesday Afternoon

April 23rd, 1924.

And also G. A. Kositzky, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. Shuler:

Q. We had finished the data on the matter we were discussing at the recess I think. Do you know whether or not they actually paid more for cable previous to the introduction of antimony or less?

A. Yes, it effected a saving of about—A deduction was about five to seven per cent.

Q. In the selling price?

A. Yes, sir.

Q. You were through with your data on the lead-antimony, were you not?

A. Yes, but I was not sure whether I had quite made one point clear as applicable to items 1, 2 and 3. That is, the savings as I have computed them are only on that plant to which they apply and not on the total plant.

Q. What do you mean by that?

A. That is, I only computed savings of antimony sheath to the cable that is now antimony sheath and not to the total plant. There is some tin cable still in the plant. That, of course, I have excluded. The same way with the savings of fine wire cable. That is only that plant that is in the [fol. 9002] plant that is now fine wire and not — that is not fine wire. That is only the plant to which these savings are applicable.

Q. I think I understood you to say that you used three per cent of tin in your calculations?

A. Three per cent tin, yes. That was the alloy used prior to the introduction of antimony.

Q. Do you know whether or not the Central Union and the Cleveland Telephone Companies actually did specify three per cent previously to the introduction of the antimony?

A. The cable is ordered under a certain specification and that specification says whether it is antimony tin alloy.

Q. Can't you answer my question yes or no.

Mr. Shuler: Read the question.

Question read.

Q. Three per cent tin?

A. I don't know.

Q. Mr. Kositzky, will you explain just briefly again how you arrived at your duct saving? I don't care for the detail. The method you used is what I want.

A. The method? All right. Take in Item 2 where we use now 900 pair and 400 pair cables. Prior to the introduction of these cables 600 pair was the largest size. Now a 1200 pair cable requires say one duct where formerly it was necessary to place two sixes; that would require two ducts. The 900 pair cable today take- one duct while formerly two 900 pairs would require three sixes, or three ducts instead of two. So that in that manner, I have computed the additional duct feet that would be necessary if 600's [fol. 9003] were in the plant today against the 9's and 12's that are there today.

Q. Can you actually build me two conduits side by side a certain length?

A. I don't just understand what you mean.

Q. Well, now, I want to get a concrete example. Suppose we would build a conduit a half a mile long. Just for the example take a cost per lineal foot for a four duct conduit. I don't care what you take for the example just so you use the same figures all the way through?

A. You don't care whether it is under-pavement or whether it is out in the parkings? That would make no difference? Do you want a manhole——

Q. The way you build them, the way you build them; I want to build them the same?

A. A four duct conduit a mile long, fifteen manholes—I think that is about what they might average—Under asphalt pavement, you want to know about what that would cost today?

Q. Yes?

A. With laterals to and from the manholes, which is also customary.

Q. I don't care for that particularly, do I Mr. Kositzky?

A. I don't know what your problem is.

Q. The problem is I want to see how you figure out the saving as between the four and the six duct conduit, that is all?

A. I can answer your question without going through with this formula then. Merely this, that the nine and twelve hundred pair cable require fewer ducts, so that there is that capacity of conduit saved that we have available because [fol. 9004] of the use of these larger cables, which would have this value.

Q. Which value?

A. The value I mentioned in Items 1 and 2 of the conduit savings. I have taken an isolated section. It might apply to a greater extent or a less extent.

Q. Mr. Kositzky, I just want to get an example of your prices is all. Let's say a conduit a mile long with four ducts cost a certain sum of money. I don't care what you make that cost?

A. Say $20,000.00.

Q. Now, what would a conduit, a six duct conduit, the same length, built the same way, cost?

A. Say $35,000.00.

Q. Now, if that is true, you contend you save $15,000.00 by this cable?

A. You can save $15,000.00 if the four duct conduit can be made to answer the purpose of the six.

Q. Precisely so; and that is the way your arrive at this saving, that the four duct conduit answers the purpose of six, because of the smaller wires in the cable?

A. No, I did not arrive at it exactly that way. Each duct has a certain value, and if you are able to postpone ducts you postpone construction, and this is the number of ducts that we have for future use by using the larger size cables.

Q. Mr. Kositzky, your estimates here before the Commission are based on present reproduction of plant; is that right?

A. Yes, sir, that is right.

Q. All I am asking you to do is to tell us what the dif-
[fol. 9005] ference would be at present day prices, building a four duct conduit and a six duct conduit?

A. I just gave it to you approximately.

Q. We will say it is approximately $15,000.00?

A. All right.

Q. What makes that difference of $15,000.00?

A. That is the difference in the sizes of those two.

Q. Maybe I can make myself clear this way. To dig a trench to put a four duct conduit in costs the same amount as to dig a trench to put a six duct conduit in except that perhaps the six duct conduit must be a few inches deeper?

A. That is about right, yes.

Q. That is right; now, if it cost $1.50 per lineal foot to build a duct or a conduit for four ducts, it would only cost a few cents more per lineal foot to dig it sufficiently deep to put in two more conduits?

A. If you build it that way, that is right, yes.

Q. And then the additional cost in building a six duct conduit over a four duct conduit is the difference between four inches or six inches of digging, and the purchase price of two more ducts, and the cost, labor cost, of laying the two more ducts; isn't that right?

A. That is true, if you do this in connection with a new job.

Q. That is what your figures are based on, reproducing the plant new today? Am I right?

A. It is taking the value of the ducts saved today. That is another thing altogether.

[fol. 9006] Q. Now, as I have stated it to you, the difference

in digging four or six inches deeper, the cost of two more ducts, and the placing of those two more ducts in the trench, is not $15,000.00 a mile, is it?

A. Not on that kind of a job, no.

Q. Now, what you have done in estimating your saving is this; you have built a four duct conduit one mile long and found out that the per duct foot cost is so much per lineal foot, is that right?

A. Substantially, yes.

Q. And you have likewise built a six duct conduit and figured the per lineal foot cost, haven't you?

A. No, I have not taken the sizes at all. I have merely taken the duct feet saved by placing the larger cables over a period——

Q. What are the prices you have used in figuring out the saving? Let me have those. I want your unit cost?

A. The duct foot average cost——

Q. The duct foot average cost today——

A. Taking all sizes under average conditions, pavement conditions such as we have, with the manholes, subsidiaries and so on, reduces to 94 cents per duct foot.

Q. Now, we are going to take a six duct conduit a mile long—No, let's take it a thousand feet—A hundred feet long—You then would have ninety-four dollars, wouldn't you?

A. 100 feet.

Q. What size?

A. That is one foot.

Q. That is one duct foot?

A. Of course, if you build one you can't build it for 94 [fol. 9007] cents. It would probably cost several dollars.

Q. What number if ducts did you want to take?

A. This is the average of all the conduits in the State of Ohio.

Q. That is what you have used in this case irrespective of the number of ducts in the conduits?

A. Yes, sir, that is the value of the ducts today in the Ohio Bell plant, 94 cents per duct foot.

Q. And that is the reproduction cost, present day prices; now let us take a four duct conduit 100 feet long, and what would it be?

A. That might run anything, $600.00 or $1000.00.

Q. Let me put it this way, Mr. Kositzky. My contention is this, that the saving made by a four duct conduit over a six

duct conduit is simply the difference of digging a trench in the case of the six duct conduit a few inches deeper?

A. If you want to take it that way, yes.

Q. And the cost of the two ducts in addition thereto, plus the cost of laying the extra two ducts. Now, if you base your savings on that method, would you arrive at the same amount of savings as you do by your method? Your method would give you a very substantially larger amount of savings would it not?

A. I don't know, it might be larger.

Q. It would be substantially larger, wouldn't it?

A. If you take a condition like you have mentioned, yes, it [fol. 9008] would be larger.

Q. What rate of annual depreciation do you use in connection with the Number 14 twisted pair wire, or copper?

A. I use the same rate——

Q. I didn't ask you that. I asked you what you used?

A. 15 per cent, the same as the number 17 CC.

Q. What is the respective junk values of the two?

A. The copper is higher.

Q. The copper wire junk value is higher than the other that you have substituted?

A. That is right.

Q. Is the difference in life service enough to compensate?

A. I worked on differences. I took the difference between the copper and the copper steel and then applied annual charges against that. I did not apply any against one and then on the other.

Question read.

Q. Answer that question yes or no, or if you cannot answer it say you cannot.

A. About the same, I should say. There wouldn't be a great deal of difference.

Q. Going on with the data in this Exhibit 31, will you give us what you have? It seems that some of the attorneys, Mr. Kositzky, do not yet understand your method of computing the savings in this duct.

Mr. Burr: That is not a question.

Mr. Shuler: He has answered all the other questions.

The Witness: Let's see if I can make it clear.

Mr. Burr: I suggest a question be asked.

[fol. 9009] Mr. Shuler: I asked him to explain his method of computing the savings in ducts by the use of 900 pair cable or the 1200 pair cable. Take either one. I don't care which one you take.

The Witness: Well, it doesn't make any difference. Let's take the 1200 pair. The 1200 pair 24 gauge cable will occupy one duct. Now, before the introduction of the 1200 pair——

Q. It took two sixes?

A. It took two sixes. So what we mean is this, that where you have one duct in use with the 1200, you would have under the conditions the two ducts, and each duct has a certain use value, and in this particular case it is 94 cents per duct foot. That is the use value of the plant. And with every occupied duct—The conduit is about 50 per cent in use. It is not quite 50, but I have used 50 per cent, the spare duct being for growth, for city's use, such as fire and police cable, and it is good policy to have an emergency duct for maintenance purposes. And then there is always a certain number of, you might say filler-in ducts, when you build a six duct instead of five or a nine instead of eight, that is, economical sizes, so that there are always in a system a number of idle ducts. And that runs about two ducts in a system to one in use. So for every duct that we were able to save by use of this 1200 pair cable, we had one less duct in use, or the value would be equivalent of two ducts—duct feet.

Q. Yes, but you mean if you save two ducts, you save [fol. 9010] two times ninety-four cents.

A. Yes, sir.

Q. Or $1.88?

A. Yes.

Q. Per foot; is that right?

A. Yes, sir.

Q. And in a thousand foot conduit you would save $1,880.00; right?

A. If you had a 1200 pair cable a thousand feet long in that conduit, yes.

Q. But now the cost of putting in one more duct or two more ducts when you are building a conduit, making sufficient space for two more ducts and placing two more ducts, would not amount to that much would it?

A. No, but we don't build the conduit——

Q. Wait a minute.

Mr. Burr: Let him finish his answer. Just a moment?

A. We don't build conduit at the time we order the cable. We would not build a six duct or we would not place two additional ducts; we would probably place 12 additional or some larger size. So I do not see how that example can be applicable at all, Mr. Shuler.

Q. Mr. Kositzky, the difference in the cost of two things is the difference between the cost of building them; isn't that right? The cost of digging a trench is so much, isn't it? Now, how deep a trench would it take to put in a four duct conduit?

A. That depends on the clearance required by the city over your conduits; usually about 25 or 30 inches.

Q. Mr. Kositzky, there are two companies wishing to build conduits out Clifton Boulevard in Cleveland. One is [fol. 9011] going on one side of the street and the other is going on the other side of the street. One is going to place four ducts in its conduit; the other one is going to place six ducts in its conduit. In every other respect they are going to be the same except for the one having six ducts and the other one four?

A. That is right. Now you want to know the difference.

Q. Precisely?

A. It would not be a great deal.

Q. It would be very, very small wouldn't it?

A. It would be the material in the ducts, the additional excavating and probably would be only 50 cents to a dollar per trench foot, but——

Q. Now, don't "but"?

A. Let me go ahead. Suppose this company built the four duct, of 600 pair cable and then required two more ducts; it might require additional trench then for the additional ducts; while if they would place 1200 pair cables the four duct conduit would give them twice the capacity.

Q. I am doing precisely what you have done, I think. I am building ducts or conduits, present day, present prices. That is what you have done on your method. But instead of finding out the actual difference in cost of doing that, you have devised another method which I contend is unfair, because it gives you a larger saving than the actual difference in the cost of construction of the two conduits?

A. I do not think your case is applicable at all, Mr. Shuler.

Q. I did not ask you that, because I am building this one. [fol. 9012] You have built yours and I am building mine. Now, you admit that if you found the difference in the cost of building conduits, four and six ducts sizes, my method, that the result would be very measurably smaller, whatever savings you have arrived at in your computation, do you?

A. The difference would be smaller, but the case would not be applicable.

Q. Will you for me, by tomorrow morning, give me the difference on a thousand feet on Clifton Boulevard as I have suggested between computing the saving my way and your way?

A. I can give you that right now, if you want it approximately.

Q. No, I don't want it approximately. Will you give it to me tomorrow morning?

A. All right.

Q. Now, take up the next item. You spoke of 94 cents as use value and also as reproduction cost. Do you mean the same in both cases?

A. Did I mention use value? That is the value of the ducts, average value, average cost of the ducts.

Q. You wish to strike out of your testimony anything about use value?

A. I did not know that I had made that statement.

Q. If you did, you want it cut out?

A. That is the cost, yes.

Mr. Burr: Is there any difference between the two?

The Witness: I don't know what value is.

Q. You want it cut out if it appears that you have used [fol. 9013] it? You want it cut out of your testimony?

Mr. Burr: No, he does not. He does not say that.

Q. What does he want us to understand by the 94 cents?

A. That is the average cost of the ducts in the system in Ohio—Reproduction cost.

Q. If you used the words "Use value" in the record, what do you mean by those words?

A. I don't know.

Mr. Burr: Do you maintain that there is such a term in the record?

Mr. Johnston: If you will allow me to speak I understood that he did use that term and we want it cut out or explained.

Mr. Burr: Does it occur in the direct examination.

Mr. Shuler: No, just recently.

Mr. Johnston: In the cross. I take it now that it is an inadvertent use and does not mean anything where it is.

Mr. Burr: I think we know now to what he refers when he speaks of the 94 cents.

Mr. Johnston: That is my understanding.

Q. What is your data on the copper-steel twisted pair wire?

A. I think we went into that in detail. You have that.

Q. What is that?

A. The copper-steel twisted pair wire, that is the first item we took up in the cross-examination.

Q. Well, the duplex cable?

A. There are 3,763,675 quad feet of underground duplex, [fol. 9014] 19 gauge conductors, a quad being two pairs, and there are 7,320 quad feet of submarine duplex, 16 gauge conductors. In non-duplex cable, there would be 50 per cent more wire. Reducing it to pair feet, it would be three times the quad feet, or 11,291,025 pair feet in the underground cable and 21,960 pair feet in the submarine. Now, the underground cable, using costs——

Q. What cost?

A. On a foot basis, since these are reduced to feet, would be .02151 cents per foot for the non-duplex, and .01326 for the duplex, or a difference of .00825 per foot saving. That is for the underground cable. And for the submarine cable, it is .14503 for the non-duplex and .1379 for the duplex, or a saving of the difference of .00774.

Q. Will you give us those figures again?

A. For the underground for the non-duplex it is .02151.

Q. The next one?

A. Duplex .01326.

Q. Now, the next one?

A. Submarine is .14503 and .13729. The savings would be the difference, in the case of the underground it would be .00825, in the submarine, .00774. Now that, applied against the quad feet, gives a current cost saving, first cost, underground cable, $31,064.00, and $57.00 in the submarine, or of $31,121.00. Now applying annual cost percentages to

this cost for the underground, using a percentage of 25.68, the same as was detailed before, $4,871.00, and in case of the submarine of 26 per cent, or $15.00, giving a total first cost [fol. 9015] saving of $31,121.00, and an annual saving of $4,886.00.

Mr. McConnaughey: Mr. Kositzky, why is it that the cost of the duplex is about 50 per cent more than the non-duplex? It is a little more than 50 per cent. Why is that?

The Witness: It cost a little bit more to manufacture the duplex cable than the non-duplex, because of the pairing up. So on the pair basis, it is slightly more.

Q. The next item now, loading?

A. This is the loading in the exchange plant and is applied to the inter-office trunks. And there are in the Ohio Bell 12,580 circuit miles of loaded inter-office trunks, as of the end of 1922. That is the figure that I had and used. These are 19 gauge loaded conductors. To get the same equivalent in transmission without the loading, without these loading coils, would have required a ten gauge conductor or a cable consisting of ten gauge conductors. The average size cable only contained 38 pairs, while the average size of 19 conductors is 200 pairs, so that we have 331 and a fraction miles of cable of the ten gauge, where now we have only 62.28 of the loaded conductor cable.

Q. Can you give us the supporting data on that?

A. Yes, what do you mean by the supporting data.

Q. I want to know where you arrive at the results you have?

A. So far I have given the data as I have gone along.

Q. But these miles you are talking about are located all [fol. 9016] over Ohio?

A. It is mostly in Cleveland. That is the only city where we have loaded inter-office trunk.

Q. That is what I thought?

A. And it is right there. It is the exchange loading. Now, under toll I have the figures.

Q. Did you ever install any ten gauge cable in Cleveland for this purpose?

A. No, sir.

Q. How long has it been since any was installed to your knowledge?

A. I don't know.

Q. Have you any idea when it was installed?

A. No.

Q. But you are computing a saving——

A. To get the equivalent, it would require a ten gauge conductor or the transmission equals of a ten gauge conductor, yes, sir.

Q. Go ahead?

A. Now, reducing this again to conductor feet, as we started out with conductor feet, 12,580 circuit miles I should say, of Number 10 cost $207.00 per circuit mile, and taking 82 per cent of that, because of the fact in this case, I have assumed if the fine wire cables had not been developed, we would have had coarser wire in the other part of the plant, so as to reduce the necessity of a hundred per cent loading down to 82 per cent, that would reduce this to $169.74 per circuit mile of the equivalent or the 19 gauge conductor is $39.00, so the savings in conductors is $130.07 per circuit mile.

Q. You say the cost; the cost as of what?

A. Reproduction cost.

Q. Oh?

A. Yes.

Mr. Burr: Continuing your answer——

[fol. 9017] The Witness: Now, the loading, to load the 19 guage wire costs $11.66 per mile. So I deduct that from the saving. That reduces the saving by the cost of this loading of $11.66. Then applying these costs to the circuit miles of loaded conductor, take 12,580 circuit miles times the $130.74, would be $1,644,709.00. Now deducting from that $11.60 for the price of loading would be $146,680.00. And there again you have got in one case a 200 pair cable and in the other case only a 38 pair cable. You would require 268.77 miles more of conduit, or rather more of cable. That reduced to duct feet would be 2,838,211 of duct feet of conduit required because of the larger amount of cable. And that, priced out, is $2,187,693.00, making a total saving in first cost of $3,685,722.00. Now, applying to these three items annual charges as detailed before, for instance, underground cable 15 per cent, the loading 16½ per cent and the conduit 13½ per cent, gives for the underground cable $246,706.00, a deduction for the loading of $24,202.00, because that is subtracted, plus the conduit of $295,339.00, or a total of $517,843.00.

Q. Give us Line 7.

A. Line 7 is a line I did not compute. I merely carried that in there as a total. It was testified to by another witness.

Q. You did not have that?

A. No.

Q. Who testified to that?

A. Mr. Anthony.

Q. Mr. Kositzky, you spoke on Page 1190 as to Item 9. How did you arrive at that?

[fol. 9018] A. The old tinsel cord, which we used prior to the introduction of the new tinsel cord, was 43 cents a cord. It had a life of four months, required repairing once a month. A new tinsel cord cost 69 cents per cord, had a life of two years, required repairs once in eight months. So that, computing the two on the basis of a two year life, taking the turnover and the repairs and all added together, gave in the case of the old tinsel cord a first cost of $2.58; in other words, we would have to have six cords in the two year period; they would have to be repaired to the extent of $2.40; and the old cord would cost in the two year period $4.98. The new cord lasting two years, we require but one cord in that period, 69 cents; repair once in eight months or three times in the two years, which would be 30 cents, or its total cost would be 99 cents. Over the two year period there would be a saving of $3.99, reduced to a one year period, would be half of that, or $1.99. And there are 125,581 of these new tinsel cords in the plant today, and the product of that $1.99 would be $249,906.00.

Q. Then I presume you want to change the record, 1190 where you say, "So that the saving in the cord in say a two year period, or the life of this new cord, is about $1.99." You do not want the record to show that the saving is $1.99 for the two years?

A. That is right, the life of the new tinsel cord.

Q. A saving of $1.99, for the two year period?

A. Yes—No, your pardon. That is a per year basis.

[fol. 9019] Q. The record though shows two years?

A. That is wrong. It should be $1.99 per year.

Q. Now, coming to Item 11, the cheaper contact metal?

A. Now, in that case—Do you want me to go ahead with that?

Q. Yes?

A. In that case, I did not have exact figures as to the metal that was used in Ohio. I did, however, obtain the amount of this metal that had been used in the Bell system, and I merely prorated that to Ohio.

Q. On what basis did you prorate it?

A. I took the period of six years, 1916 to 1921. Now, in the Bell system, while used in 1916—That is, the saving in the year 1916, $566,984.00, and the Ohio Bell ratio, taking stations of the Ohio Bell to the total, was 2.8 per cent. I took for that year 2.8 per cent of the total saving. Likewise, the year 1917, the saving was $1,746,936.00.

Q. How did you get that savings?

A. Those are figures that were furnished me.

Q. By whom?

A. Mr. Rhodes.

Q. Are they the same figures that he testified to here?

A. I am not sure. I asked him for these figures and this is what he gave me. In the year 1917 the ratio of the Ohio Bell to total was 2.7 per cent, which would make the Ohio Bell allocation $47,167.27. In 1918 the Bell saving was $2,266,232.00 and the Ohio Bell's allocation, taking 1.7 per cent, was $38,525.94.

Q. In 1919 the Bell system saving was $638,304.00. Tak- [fol. 9020] ing 2½ per cent as the Ohio Bell's proportion, $15,957.60.

In 1920 Bell system saving $3,104,904.00. Ohio Bell's proportion 2.6 per cent, $80,720.50.

In 1921 Bell system saving $5,143,368.00; the Ohio Bell's proportion was 3.8 per cent, $195,447.98.

I haven't any figures for 1922 or 1923, but the total for those years amounts to $393,701.84.

Mr. McConnaughey: What is that proportion of Ohio to the whole? Proportion of what to what?

The Witness: On the basis of stations, telephone stations.

Mr. McConnaughey: Stations in use or stations affected?

The Witness: No, telephone stations. That is the nearest method that I had of getting an allocation which might be proper for Ohio.

Mr. McConnaughey: Is that the total number of stations of Ohio?

The Witness: To the total in the Bell system.

Mr. McConnaughey: You mean to say that the total num-

ber of stations in Ohio is only that per cent of the total number in the system?

The Witness: Yes. Of course. In those years, you know, Mr. McConnaughey, the property of the C. & P. was not in Ohio. Strictly the Ohio Bell or what is now the Ohio Bell was a smaller proportion than it is today.

Mr. McConnaughey: Did you leave out Cleveland and [fol. 9021] Cincinnati?

The Witness: Left out Cincinnati, yes.

Mr. McConnaughey: And the C. & P.

The Witness: Yes, sir, and the Ohio State.

Q. Now, Mr. Kositzky, you say that this item——

A. It is only five per cent today with the Ohio State added.

Q. You say that the item of loading, Item 6 of Exhibit 31, three million some hundred thousand dollars, is only applicable to Cleveland?

A. Yes.

Q. Now, later on in your testimony you apportioned these savings over the various cities of Ohio according to property values didn't you?

A. Yes, that is what the savings would be.

Q. Therefore that apportionment is not very accurate is it?

A. No, sir, that is not it. This is merely a Cleveland saving. It is only allocated to Cleveland.

Q. But when you came to allocate all of the savings you added the savings on Exhibit 32 to the savings on Exhibit 31, found a sum of $29,936,600.00 and apportioned that to the various cities, did you not.

A. No, I did not. 32 was toll. That remains strictly in the toll property.

Q. What did you allocate to the cities?

A. I took just the items on page 31.

Q. On Exhibit 31?

A. On Exhibit 31, yes.

Q. You just allocated those?

A. Yes, sir.

Q. And that includes the item 6 that is applicable only to Cleveland?

A. Yes, and I am not sure just how I handled Cleveland. [fol. 9022] There may be an error in it.

Q. Then, if you did allocate all of 31 to the cities of the

state according to property located in those cities, it is not a proper allocation is it?

A. It is subject to correction by this amount.

Q. By that amount plus Item 8, prepayment coin box equipment?

A. No, we have those in all the larger cities in Ohio. I am not sure yet whether that loading has been allocated to the cities.

Q. It is not an accurate allocation?

A. I cannot answer that, because I say I am not sure whether the Cleveland loading was allocated to the cities or not. I would have to check that.

Mr. Burr: May I ask a question here?

Mr. Shuler: Yes.

Mr. Burr: If the savings shown under Item 6 had been computed for the exchanges in the State, other than Cleveland, would the total amount of the savings for that item have been greater or less than that given by you?

The Witness: It would be the same. That is the totals on Exhibit 31 would not change.

Mr. Burr: I am talking about Exhibit 31. I am talking about the Item 6 which if I understand you correctly, you say you have computed only for the City of Cleveland.

The Witness: That is right. It is applicable only to the City of Cleveland.

[fol. 9023] Mr. Burr: I see. That is all.

Q. In Exhibit 32, Item 5, open wire phantom circuits, have you included any poles there?

A. Yes, sir.

Q. Then give us the figures on that, will you?

A. There are in Ohio in the territory of the Ohio Bell Company's plant 18,765.18 miles of phantom circuit. If these phantom circuits were not in existence, to get the same amount, the same number of talking circuits or the same equivalent, it would be necessary of course to place that many miles of physical circuit of the same character. Such a circuit costs, reproduction, $146.00 per circuit mile, so applying $146.00 to the total miles phantom circuit, gives an item of $2,739,716.00 of additional copper wire necessary. Now without the phantom circuit of course we would not need the phantom transpositions or the phantom brackets, together with the phantom coils, and this deduction amounts

to $15.38 per mile of phantom circuit, and that, applied to the 18,765.18 miles would be a deduction of $288,608.00. For every dollar's worth of wire that we have in the plant, there is necessary for poles, cross-arms, guys, pins and all pole accessories, $1.88, chargeable to the pole plant or this type of plant, so that applying that ratio—the poles, by the way, would amount to $274.48 per mile, and that, applied to the total miles of phantom circuits amounts to $5,150,666.00, giving a total of $7,601,774. Applying annual charges to those items, to the wire 15.2 plus the circuit mile charge for maintenance, $529,028.00, and the phantoms a [fol. 9024] deduction of $43,868.00, and also the poles, annual charge of 18.8, $969,325.00, making a total saving in annual charges of $1,453,485.00.

Q. That again is reproducing the plant as it is at present day prices?

A. Yes, sir.

Mr. McConnaughey: That also assumes you would put up new poles for all these additional miles of wire doesn't it?

The Witness: Yes, it assumes we will have to have that much more investment in poles, cross-arms, pins, guys, glass and so forth.

Mr. McConnaughey: But you would not have to have that much additional poles would you? You would probably string these on existing poles?

The Witness: It would do this then, Mr. McConnaughey. If the pole had the capacity, deprive us of that capacity and we would have to make an investment to get that additional capacity, either now, to get the equivalent, or sooner than we otherwise would.

Mr. McConnaughey: If and when you did it.

The Witness: When we needed it.

Mr. McConnaughey: If and when.

The Witness: Yes, sir.

Q. Mr. Kositzky, do you know whether or not the Independent Telephone Companies have used 22 gauge cable generally?

A. When they started to use it?

Q. Yes?

A. No, I don't.

Q. Do you know whether the Independents bought all [fol. 9025] their 22 gauge cable from the Western Electric Company?

A. I don't believe they did.

Q. They bought it from other persons engaged in the manufacture of that type?

A. I think they bought it generally, some from the Western and some from others.

Q. Roebling?

A. I wouldn't wonder.

Q. Standard underground?

A. I think so, yes. They are cable manufacturers.

Q. Do you know how long other manufacturers like the Roebling and Standard Underground Cable have been making and marketing telephone and other cables?

A. No, I don't.

Q. The independents have used phantom circuits all along haven't they, Mr. Kositzky?

A. No, sir.

Q. Since when have they used them?

A. I know that the Ohio State Plant had but very few phantoms in it at the time we started operating that property, very few.

Q. Had but very few you say?

A. Yes.

Q. It had some, however?

A. Yes, we found a few.

Q. Do you know anything about the independent companies in other states, as to whether or not they have been using them?

A. To a very limited extent.

Q. With relation to this contact metal that you spoke about, do you know what was done by other manufacturers of telephone or electrical equipment at about the time that platinum became prohibitive?

A. I do not generally. I do know this, Mr. Shuler, that [fol. 9026] we have recently encountered some contact points on equipment manufactured by other manufacturers that was neither platinum nor palladium.

Mr. Burr: Other manufacturers than whom?

The Witness: Than the Western Electric, and it is very troublesome and is giving us a great deal of difficulty.

Q. Do you know whether or not the General Electric or the Westinghouse Company did anything in that regard in connection with their products?

A. I do not.

Q. Have you compared the cost of the American Company's new contact metal with the contact metal of the General Electric Company or any other actual maker of electrical contracts?

A. No, I have not.

Q. You simply made the comparison with the cost of the Western Electric, with the present day prices of platinum?

A. That is right, taking the figures as they were furnished me and trying to make a fair allocation to Ohio.

Q. If you would make a comparison with the General Electric prices for instance, do you know whether it would be lower or higher than the difference you have found in the way you have calculated it?

A. I don't know.

Q. You said Rhodes furnished you these figures on this contact metal?

A. The figures for the Bell system, and I allocated them.

Q. And the prices, too?

A. I used the prices that he gave me.

Q. That is what I thought you said. Wouldn't you say [fol. 9027] as a matter of fact that the advancing price of tin caused the use of antimony in cable sheaths?

A. I believe I testified to that. The tin prices did advance.

Q. What did you testify?

A. The price of tin was gradually advancing. Antimony was obtainable at much lower prices, and we found that a compound of one per cent antimony gave the same physical characteristics so far as subjecting the cable sheath to vibration and bending as the three per cent tin.

Q. Well, you answered my question, Mr. Kositzky?

A. Yes, sir.

Q. On page 1,190, you refer to the change from the old gravity type relays to a new type smaller spring relay. You do not mean to say that the other manufacturers of relays have clung to the old bulky type do you?

A. I cannot answer as to that.

Q. You don't know. Do you know any manufacturer of electrical appliances, telephone, telegraph, light or other products that has been in business through 20 years past and whose product today is as bulky, heavy, complicated as it was ten or twenty years ago.

Mr. Burr: If you call a hen a producer, I suppose it is.

Mr. Shuler: I did not say producers. I said manufacturers. What is your answer?

The Witness: I don't know, I can't answer that.

Q. You can't answer that? You mean to say that the Kellogg people are making the same bulky heavy, compli-
[fol. 9028] cated telephone equipment and apparatus as they did 20 years ago?

A. I don't think they are. I don't know.

Q. Do you think the General Electric has not improved any of its products in the last 20 years?

A. I should not be a bit surprised but what they have. I don't know.

Q. You don't know whether they have or not?

A. Not in detail. Generally, I should think they have.

Q. Don't you know that they have improved for instance the incandescent light or lamp?

A. Oh, if you make your question general, they have.

Q. The Westinghouse has likewise made great progress in manufacturing and producing and marketing equipment has it not?

A. I should say, yes.

Q. Can you give me any public utility company in any city whose service over a period of 20 years has not been improved?

A. I don't believe I can.

Q. In other words, for instance, electric lighting companies' services and equipment have been improved very materially in the past 20 years; is that right?

A. Yes, sir.

Q. Their prices of their product to the consumers have been decreasing all the time during that period, 20 years; isn't that right?

A. I don't know as to detail. In some localities probably they have.

Q. In Ohio, yes; let's take it in Ohio?

A. I can only go back five years.

Q. In that five years has it?

[fol. 9029] A. I think they have increased in the five years.

Q. You think? You think that the Cleveland Electric Illuminating Company prices have increased in the past five years?

A. I cannot say as to that detail, but things in general have increased.

Q. Don't you know that about three years ago they decreased both their power and their household schedule?

A. No, I don't.

Q. Don't you know that within the past month they made another decrease in their power schedule amounting to a million dollars a year?

A. I knew they recently made a decrease to their consumers.

Q. In your schedules of savings you are not making comparisons with the rule or trend of other manufacturing and public service companies, but on the assumption that the telephone art would be today what it was 20 years ago if the General Staff had not performed services under the four and one-half per cent contract; is that true?

Mr. Burr: If he can understand that question, I can't.

Mr. Shuler: Who is to say whether he should understand it, you or I?

Mr. Burr: I have a right to raise the point that the question is not understandable.

Mr. Shuler: But you have no right to say to him that he cannot answer the question.

Mr. Burr: I have not so stated.

Q. Can you answer the question?

A. No, I can't.

[fol. 9030] Q. That would have been your answer earlier, would it?

A. I probably would have had to ask you another question or two.

Q. Now, you cannot ask that other question or two? Now let us have Mr. Kositzky's testimony. Mr. Kositzky, do you not know as a matter of fact that all other lines of manufacturing, including manufacturers for public utilities, have increased their facilities and improved their equipment during the past 20 years?

A. I should say generally yes, that that has happened.

Q. Now, did you take that into consideration when you made up your estimate of savings?

A. No, sir.

Mr. Burr: Why should he?

Mr. Shuler: Let him testify. You can argue.

Q. Mr. Kositzky, when you made up your schedule of savings did you take the telephone art in a static condition as of 20 years ago and consider that if the American Company had not acted in an advisory capacity with the associated companies, there would have been no advancement

in the art of telephony? First, can you answer the question?

A. I don't believe I can answer that question. I have only computed the items of savings. There are probably hundreds of others I have not considered at all. Just a few significant ones.

Q. But do you remember that my question was as to the savings you have computed and not as to savings anyone else has computed? You have computed certain savings have you not?

A. That is right.

[fol. 9031] Q. Nobody knows but you what you considered in your computations; is that correct?

A. Yes.

Q. You did consider certain things when you made your computations, did you not?

A. Certainly.

Q. Did you consider among other things that if the American Company had not its General Staff, the art of telephony would be today where it was 20 years ago?

A. I did not consider that.

Q. You did not consider that? In other words, you took it for granted that without the General Staff the art of telephony would have gone ahead and advanced just the same as all other manufacturing arts have?

A. No, I did not take that into consideration. I just picked out a few items of improvements that I knew the A. T. & T. were responsible for and tried to evaluate them in dollars. I did not consider the advancement in the art at all.

Q. But the other day you said you did not know what they had done in the way of improving the 22 gauge cable didn't you?

A. I merely knew——

Q. Answer my question please?

A. In detail, I do not know what they did do.

Q. On page 1158 of the record you refer to a very careful estimate of your station growth for the coming year, and you said the amount of expenditures necessary for the growth in the coming year, 1924, is eleven and one half million dollars. Can you give us an estimate of the station growth for the year 1924?

A. I cannot give it—I cannot give it exactly. I think it around about twenty thousand.

[fol. 9032] Q. Twenty thousand?

A. Yes, that is the best I can give you now.

Q. What was the growth last year?

A. The growth last year of course was—— We had some abnormal losses, so that it really does not give you a true picture of the conditions.

Q. Were you finished with your answer?

A. Yes, sir.

Q. What was it?

A. Only about four or five thousand is all it grew last year.

Q. What was this abnormal condition you speak of?

A. It was the loss due to the consolidating of certain offices and private branch exchanges in the various cities in Ohio.

Q. Will you give us an estimate of station growth for the next five years?

A. It runs from twenty to twenty-five thousand, not accounting for further duplicate station losses.

Mr. Burr: Is that per year?

Mr. Shuler: Yes, isn't it per year?

The Witness: Yes, per year.

Q. Have you estimated the station losses during that same period?

A. Yes.

Q. What are they?

A. We have it in this manner. We have the gross connections and the gross disconnections. In the disconnections would be the losses, and the difference would be the station gain. They run something like this. The gross connections are about a hundred thousand a year and the disconnections about eighty thousand a year, and the differ-

[fol. 9033] ence is the net gain, twenty thousand.

Q. When you speak of disconnection you mean that you absolutely lose the subscriber or that it might be a transfer by the subscriber from one place to another?

A. It includes that also. It is what we call the in and out.

Q. Do you think that is normal, or is it due to Ohio State phones being disconnected?

A. There is about five in and four out. It has been a little abnormal the last year or two.

Q. You don't seem to answer my question. You said it

was abnormal. Is that due to the fact that Ohio State subscribers are giving up their phones is the question: I — speaking now——

A. That was the case last year.

Q. Now, as to the future, are your losses going to be abnormal, do you estimate?

A. Because of the Ohio State?

Q. Because of the Ohio State subscribers giving up their——

A. No, I think we have had the biggest losses because of that.

Q. You think you have had the biggest losses because of that?

A. Yes, sir.

Q. Have you these estimates of station growth for the particular cities of Cleveland, Toledo, Akron, Canton and Dayton?

A. No, I have not.

Q. Do you think you can get them?

A. I think so.

Q. We would like to have them if we can. Now taking [fol. 9034] again your Exhibit 30, have you assumed the existence of the Ohio Bell Company without the instrument service of the A. T. & T. Company and with other conditions practically unchanged that is, that instrument service savings?

A. Will you read the question please?

(Question read.)

A. I don't know what you mean.

Q. All right. With other conditions practically unchanged, I mean by that that you assumed no change in the market, no inter-relations with other telephones, no other sources of supply than the Western Electric?

A. Why, I did consider the price of instruments as furnished by other suppliers. I have those prices.

Q. And you considered those?

A. Yes, sir.

Q. Now, on that point, Mr. Kositzky, does the Ohio Bell Company furnish any instrument sets to its connecting companies?

A. Very few if any. I cannot cite any cases where they are doing that.

Q. Don't you know, as a matter of fact, that in New York

the New York Telephone Company does furnish these instrument sets to its controlled and connecting companies at 75 cents a year?

A. I don't know. If they do that, the connecting companies are getting a pretty good thing.

Q. And don't you know—Is Mr. Sylvan or Mr. Grace the head of the New York Company?

A. Mr. Thurber.

Q. Mr. Sylvan is the vice-president, I believe?

A. He is the vice-president.

Q. Don't you know that he testified in New York in the [fol. 9035] New York rate hearing case that he did furnish these instrument sets to connecting companies at seventy-five cents a year, for the reason that they could get an instrument set which would render them the service for that price, and that if he did not furnish these sets to them at 75 cents, they would use the other one, 75 cents a year?

A. I didn't know about that.

Q. In your exhibits 31 and 32 of estimated savings, you have imagined the Ohio Bell Company, not only without the developments which came to it through the American Company, but also without any substitutes therefor have you not?

A. I don't know what you mean.

Q. I mean this, Mr. Kositzky; let us suppose that the independent companies have been using all these things that you speak of in 31 and 32 exhibits; they have got them without the payment of the four and one half per cent contract have they not?

A. I think you will find that in most cases they have copied from us, from the Bell companies.

Q. I did not ask you to give me some opinion. I asked you to answer the question I put?

A. You mentioned the independents. They have used some of these savings of course.

Q. Haven't they used all of them? Haven't they used all of them?

A. No, they have not.

Q. They have not?

A. No, sir.

Q. What?

A. They have not used the leading; they have not used the duplex cable; they have not used the 900 and 1200 pair

[fol. 9036] cable unless they purchased it from the Western.

Q. Precisely; they can purchase all of those from the Western Electric Company can't they; didn't Mr. Rhodes so testify?

A. No, they are many things they cannot purchase.

Q. What can't they purchase?

A. They can't get the loading coil; they can't get the repeater.

Q. Where is the repeater used, Mr Kositzky?

A. Long distance transmission.

Q. Certainly. Where is the loading coil used?

A. Both local and long distance.

Q. Certainly. How much is the loading — used in the smaller cities?

A. Not at all for local.

Q. What cities do use a loading coil?

A. In Ohio, Cleveland.

Q. Only one isn't it?

A. Yes.

Mr. Burr: That ought to be enough for you.

Mr. Shuler: It is. Now, again read my question.

(Previous question read as follows: "I mean this, Mr. Kositzky; let us suppose that the independent companies have been using all these things that you speak of in 31 and 32 exhibits; they have got them without the payment of the four and one-half per cent contract have they not?")

A. Those that they have used, copied, I presume they did get without the four and one-half per cent contract, but they probably paid a manufacturer for certain development work which he may have done.

Q. Why do you say probably; do you know whether they did or not?

A. If the manufacturer purchases a patent in that case, [fol. 9037] he would have to add that to the purchase price of the apparatus, while in our case that is a part of the four and one-half per cent service.

Q. Right; and likewise the Western Electric Company adds to its price to the companies what it pays for patents does it not?

A. I am not sure, I don't know.

Q. How do you know so much about other companies with which you have no connection and know so little about the Western Electric?

A. I did not testify that I knew so much. I have been telling you all afternoon that I did not know much about the General Electric, the Kellogg and other concerns.

Q. But you said these other concerns probably add to the cost of the instrument——

A. Naturally, the cost of production.

Q. Do you think the Western Electric would do the same thing?

A. In patents owned by the A. T. & T. Company?

Q. I did not say that, did I? Mr. Rhodes testified that the Western Electric had a certain number of patents did he not?

A. Yes, sir.

Q. And they paid for them?

A. I believe so.

Q. Don't you think they add them in their cost of production for the equipment they sell the Bell associated companies?

A. I don't know. I imagine they do.

Q. Would you say that probably they do?

A. Yes.

Q. Now, on the fine wire cables, 900 pair, 22 guage, the independents can get that can't they?

[fol. 9038] A. I believe they can purchase that from the Western Electric, yes.

Q. How about 24 guage?

A. I think they can get that from the Western.

Q. How about the 900 pair, 22 guage and the 24 guage cables in all sizes, including ducts; can they buy that?

A. Probably can.

Q. That is $10,700,000.00 of your savings that any company can get from the Western Electric; isn't that right?

A. Very likely they can.

Q. In making your estimates you have imagined that the Ohio Bell Company is existing and carrying on a telephone business throughout Ohio without the A. T. & T. and without developing any of those things itself, have you not?

A. No, I am just taking this, Mr. Shuler—Perhaps I better make myself clear—These are things that the A. T.

& T. give us, and where they get them and how they develop them and all those details,—I merely know that they give those to us, and I have computed the savings on the improvement which the A. T. & T. have furnished from time to time.

Q. Right; without considering at all whether those improvements would have been made otherwise, if the American Company had not had its General Staff; isn't that right?

A. I don't know. We got those from the A. T. & T.

Q. Now, Mr. Kositzky, you have been in the telephone business for quite a while and been around through quite a number of the states in managing and advising relative to telephone business; is that right?

A. Yes, sir.

[fol. 9039] Q. Have you been in Michigan?

A. No, sir.

Q. Have you ever been in Nebraska?

A. Not connected with the telephone company, no.

Q. Do you know anything about the independent companies in those states?

A. Very little in Michigan, and not a great deal in Nebraska.

Q. Do you know that the Michigan Commission has stated in one of its decisions——

Mr. Burr: I object. The decision is the best evidence.

Mr. Shuler: Well, I will read it from the P. U. R.

Mr. Burr: You are entitled to go in as a part of the evidence——

Mr. Shuler: Anyhow this witness has never been in those states.

Q. You can imagine the Ohio Bell Company being in the telephone business in Ohio without the long lines of the A. T. & T. can't you, Mr. Kositzky?

A. I can imagine that, yes.

Q. As a matter of fact, they were here first weren't they?

A. The long lines.

Q. No, the local lines; the local companies were all established before the long lines?

A. Yes, I guess that is right.

Q. Now, looking at your map, exhibit page 29, isn't it a fact, that prior to the adoption of the loading of toll cir-

cuits and the use of repeaters there was a Bell Telephone [fol. 9040] Company service in Ohio in no wise dependent on those inventions and developments?

A. I don't know.

Q. You don't know?

A. No.

Q. Can you imagine——

Mr. McConnaughey: He has testified to it.

Q. Here is your Exhibit 29. There are some non-loaded 165 copper limit; isn't that right?

A. What was your question, Mr. Shuler?

Question read.

A. Yes.

Q. So you want to change your answer?

A. Yes, the loading was only introduced in 1901 and there were telephones here prior to that date.

Q. Now, Mr. Kositzky, can you imagine the existence of the long lines of the A. T. & T. Company without the Ohio Bell Company and the other associated companies in the Bell system?

Mr. Burr: I would like to ask counsel what he means by that question. Can he imagine the existence of the company? I confess I don't understand it.

Mr. Shuler: Our contention is that these repeaters and loading coils and most everything else, the transmitters and receivers, are all forced on the local companies as capital expense for the purpose of increasing and developing long line business, and to charge the long lines toll company ten per cent of this four and one half per cent contract price is unfair and unreasonable, that they should pay a much larger proportion if the Commissions are going to allow [fol. 9041] that contract to continue. I was bringing it out from statements of what Mr. Sylvan testified to in the New York case. He testified that the reason he gave those transmitters and receivers for instance to these associated companies or these connecting companies rather, that it increased his toll business and it was a good business proposition for him to do so. To be perfectly fair with you, I will say that he also said that he paid nothing to the American Company for those transmitters and receivers, that they gave them to him gratis, and what he received, the 75 cents

a year, he received from those connecting and controlled companies, was gravy.

Mr. Burr: That does not answer my objection to your question, which is that the question as propounded is not intelligible; at least it is not to me

Mr. Shuler: The witness has not said it is not intelligible to him.

Mr. Burr: I have a right to object because it not intelligible to me.

Mr. Shuler: No, you have not.

Mr. Burr: Yes, sir, I have a right to object.

Mr. Shuler: Yes, but not because it is unintelligible to you.

Commissioner Poor: I think the language is intelligible and the witness may answer.

The Witness: Will you read that question.

(Question read.)

The Witness: Just a long lines plant alone? Yes.

[fol. 9042] Q. Under what conditions would it be operating?

A. They could have their own terminals.

Q. Where in Cleveland for instance?

A. They would have pay stations in certain localities.

Q. Then if one wanted to use those he would leave his home and go to the pay station and use it; is that right?

A. Yes. That just depends on the number of such stations scattered about throughout the city.

Q. But the business of the A. T. & T. Company with such an arrangement in your opinion would be very small as compared with the amount of business it would have by having connection with the local associated companies; isn't that right?

A. Imagine it would be smaller. I don't know how small.

Q. It would be smaller wouldn't it?

A. Yes, sir.

Q. Isn't it your opinion that the Ohio Bell Companies are more essential to the American Company than the American Company is to the Ohio Bell Company?

A. I don't know. It think it is mutual.

Q. Fifty-fifty?

A. Oh, I can't say.

Q. Well, mutual doesn't mean anything. That is my contention?

A. I know it is a great help to people in Ohio to be able to talk to Chicago, Denver, Philadelphia, Pittsburgh, New York and Chicago.

Q. Now, take the cable between Akron and Cleveland; that is used to a large degree for A. T. & T. messages is it no, or long lines department messages of the A. T. & T. [fol. 9043] Company?

A. Oh, no, that is primarily a Cleveland, Akron cable.

Q. Isn't it used at all for the long lines department?

A. To a certain extent. They still have their open wire lines that parallel this cable.

Q. How does the traffic go from Akron to Detroit?

A. I don't know exactly, but I think it goes to Maumee, which is a point south of Toledo, by way of open wire, and there it is switched through Toledo to Detroit.

Q. Aren't you the construction engineer of the property?

A. You ask me questions about somebody else's plant that I have nothing much to do with.

Q. The Ohio Bell does a great deal of operating for the A. T. & T. messages does it not?

A. Yes, they do quite a little and the A. T. & T. does quite a little for us.

Q. You have not attempted to separate the operation for the A. T. & T. from the operation of the Bell proper in the estimate of savings due to the single ticket method have you?

A. No, I did not testify as to that at all, Mr. Shuler.

Q. On page 1092 you referred to a provisional specification for a concrete steel re-inforcement of poles, and you introduced it as Exhibit 10. Is your company actually practicing this re-inforcement?

A. I cannot answer that definitely.

Q. You cannot answer it?

A. No.

Q. How long have you had those specifications?

[fol. 9044] A. Since about the date they were issued.

Q. When?

A. I would have to look up the date of that particular specification.

Q. Approximately when?

A. They have been in existence a number of years.

Q. Isn't the Akron, Cleveland toll cable of sufficient capacity to carry all of the toll traffic between Akron and Cleveland, including the former Ohio State traffic?

A. No, sir.

Q. It is not? Why didn't you engineer it big enough to do so.

A. This cable was engineered about six years ago.

Q. You had nothing to do with the engineering of it?

A. No, but it was about as large a cable as you can place on a full line and get under one sheath. For an aerial cable it is a full size cable. It is not practical to make them larger.

Q. Do you know whether or not the General Staff engineered it?

A. They had been out on this job and they were consulted in connection with this work as I remember it.

Q. When was it constructed?

A. It was engineered a little over six years ago, and constructed about six years ago as I remember it, perhaps a little more than six years.

Q. Turning to the concrete steel re-inforcement of poles, does this method have the effect of prolonging the life of poles?

A. Yes, sir.

[fol. 9045] Q. Shouldn't it have an effect on the service life of poles as estimated for the purposes of the depreciation account?

A. Yes.

Q. Why don't you use it?

A. I cannot say that we do not. I merely have no knowledge that it is being used. You asked me if it was used and I said I did not know.

Q. You are the construction engineer; have you taken it into account in your estimate of future service life of poles?

A. We work on averages, average conditions.

Q. But did you take it into account?

A. Specifically?

Q. Certainly?

A. Oh, there are thousands of things, Mr. Shuler, that we take into account and of course, naturally that was taken into account.

Q. By whom is it taken into account?

A. In arriving at the service life of——

Q. Please, Mr. Kositzky, let the stenographer read my question and you answer it.

(Question read.)

A. By us, the Ohio Bell Telephone Company.

Q. Who is us?

A. I have a great deal to do with it.

Q. Who else has a great deal to do with it?

A. The field people are consulted.

Q. What are their names?

A. The division engineers, division superintendents.

Q. I mean their names, the names people recognize them by on the street?

A. Here in Columbus.

Q. Mr. Schneider?

A. Mr. Cherry, Mr. Schneider.

[fol. 9046] Q. Now in your rate cases when you testify do you take that into account in your estimates of the future service life of poles?

A. Yes, we take everything into consideration.

Q. Do you I said.

A. Yes.

Q. Now, you said that you do not know whether any of those poles are in existence in the state. Then, why and how can you take it into account in your estimate?

A. I say we work on averages and we take all things into consideration.

Q. You mentioned the adoption by the Cleveland Railway of Cleveland of remote control of sub-stations, some of the equipment being manufactured by the North Company; do you know whether they have a system of remote control of telephone exchanges?

A. I believe they have. I am not familiar with the details.

Q. Has your company any of them in use?

A. No, sir.

Q. Has it made any use of the machine switching equipment manufactured by the North Electric Company?

A. No, sir.

Q. You mentioned, page 1151, an item of special service received from the American Company for information and instructions in connection with machine switching or automatic service in different cities. What manufacturing company's equipment does it include?

A. Largely that manufactured by the Chicago Automatic; also that manufactured by the Western Electric.

Q. Is that all? Any others?

A. That is all.

[fol. 9047] Q. The Chicago Automatic is the Stroger?

A. Yes, sir.

Mr. Connaughey: Is that the name of the company?

The Witness: I think it is the Automatic Electric Company.

Q. Is what places has the Ohio Bell Telephone Company installed machine switching equipment?

A. Youngstown, Massillon, addition to Alliance, addition to Washington, Court House; those are the only ones—besides many private branch exchanges.—The Union Trust is one.

Q. I don't care for private branch exchanges. Has the company definite plans for installation of such equipment in any other cities?

A. Yes.

Q. Where?

A. We have plans—when you say "Definite plans" you mean just engineering plans.

Q. Yes?

A. They have not yet been approved by the company.

Q. For what cities?

A. Columbus. Some day in Toledo. Cleveland. Some day in Canton. Future additions to Akron.

Q. Is that all?

A. Generally that is all.

Q. Do you know of any plans heretofore made for such installations and definite steps taken which have been abandoned?

A. Yes, we have. There were such cases.

Q. Where?

A. We have such a case in Cleveland. When I say, "Abandoned" my answer will mean postponed. Two cases in Cleveland. At one time we had a very preliminary plan for Akron which was postponed.

[fol. 9048] Q. You don't know of any work which has been abandoned?

A. Perhaps there was one case that we were considering at one time. That was in Dayton, Dayton-Fairview?

Q. Has that been abandoned or postponed?

A. That is for the time being off of our slate.

Q. In what other places have such installations been postponed?

A. I think that covers them all.

Q. In your instrument service savings you assumed I suppose that the Ohio Bell is getting from the A. T. & T. Company neither instruments nor financial service.

Mr. Burr: Do you understand the question, Mr. Kositzky?

The Witness: No, I don't believe I do.

Q. It means simply this, that you are testifying what some other company would have to pay for this service if it were not for the four and one half per cent contract.

A. I testified that if we were not getting this instrument service it would cost us that to get this instrument service.

Q. So that it is based on the assumption that you were not getting any instrument service from the American Company?

A. That is right.

Q. Also that it was not getting financial service.

A. I don't see just where that comes in.

Q. The reason is this; in your estimate you place eight per cent for interest and you say in your testimony you are getting loans from the American Company at 5.88?

A. Let's call that eight per cent interest. You might say [fol. 9049] eight per cent return, which is commonly used by the engineers as interest. That is return on investment.

Q. You want to change that to eight per cent return on the investment?

A. Usually in our annual charge calculations we call that interest. That is, money put in property should yield a return of eight per cent, or interest, as it is commonly called.

Q. It assumes a first cost per cent of instrument at $4.50?

A. Yes, sir.

Q. And not $3.42, the cost to the A. T. & T.?

A. I have no information that we could buy it for $3.32.

Q. 42 I said?

A. 42 cents.

Q. But you do have information that that is what the A. T. & T. Company pays the Western Electric for it?

A. Only as I heard Mr. Rhodes testify.

Q. You assume that were it not for the four and one half

per cent contract, the associated companies among which is the Ohio Bell Company, could not buy in quantities at any lower price than $4.50 do you not?

A. That is right.

Q. I notice you have an administration of one per cent on a half million of instruments at $4.50, amounting to $22,500; is that right?

A. Yes, one per cent is administration.

Q. Now, what would be that administration?

A. That is generally also called general expense and is a part of the general expense that is capitalized.

Q. Of what does it consist?

A. Oh, it is the portion of the general expenses, such as [fol. 9050] the general accounting, insurance—There is quite an item of general expense as outlined in the uniform system of account.

Q. You have all of those items of expense now, to the Ohio Bell do you not, even under the four and a half per cent contract?

A. That is right. They are allocated, however, to the construction items.

Q. No, I mean on these instruments?

A. I can't say that we have. If we had more property, more to do, we would have more expense.

Mr. Burr: Instruments are not included in the inventories or appraisals.

Mr. Shuler: I know they are not. But they had to take care of these instruments.

You have to go and get them and take them to the Western Electric when you want to exchange, and you have all of that to do now under the contract do you not?

The Witness: We have. Of course, they are turned over to us and we distribute them—We have nothing to do with the responsibility for the ownership.

Q. But you have to pay taxes on them do you not?

A. The A. T. & T. pays the taxes.

Q. Aren't you acquainted with the contract? The contract says that the Bell Company has to pay the taxes.

A. I won't dispute what is in the contract.

Q. Then you didn't know that the contract compelled the Ohio Bell to pay all taxes? Can you answer that?

A. Are these taxes reimbursed to us by the A. T. & T.?

[fol. 9051] Q. I did not ask you that. I asked you whether you knew something?

A. I don't know. That is news to me if that is so.

Q. Now, explain to us the difference of administration charge in the case of where a man owns the instrument and where he merely leases it.

A. There is a considerable difference. We haven't the responsibility of the ownership and insurance and we haven't the same bookkeeping and financial——

Q. Is financing a part of the administration?

A. No, bookkeeping, however, is.

Q. You certainly have to keep books about them?

A. Yes, but if we own them we have a different system.

Q. What would the difference be?

A. Capital accounts.

Q. Would that amount to $22,500.00 a year?

A. Yes, I think it would. It would be an allocation of the expense to all of the property.

Q. You think it would cost you $22,500.00 a year to take care of the administration if you owned the instruments in excess of what it is costing you to do it under your system of leasing?

A. Yes, I believe it would. You have got to take the investment of property there.

Q. But you are charging also in this statement, eight per cent return on it and eight per cent depreciation and two per cent maintenance and two per cent taxes?

A. Those are all different items.

Q. What is maintenance?

A. That would be for the replacement of parts and re-[fol. 9052] adjustment of parts and so on, to keep them in repair.

Q. Now, Mr. Kositzky, can't you give us something concrete as to an item of additional expense to the Ohio Bell Company if they owned these sets as against their leasing the sets?

A. Not any more than I have, Mr. Shuler. If we had several million dollars worth of property we would have several million dollars worth of property to take care of, and that would add to your cost of administration.

Q. But these sets are in the homes of people are they not?

A. Yes, but they are on our books.

Q. To put them on your books would not cost you much money would it?

A. Yes, to keep a different kind of record of it, it would.

Q. Aren't they on the books now?

A. Not as property.

Q. No, but they are on the book?

A. I don't know just how they are on the book other than just the numerical number that is carried to tell us the number we have.

Q. You are sure?

A. No.

Q. You don't know from the books of your company, you cannot tell, who has telephones in their homes?

A. We know who has telephones, certainly, but not who has these instruments.

Q. Could we have a telephone without the instruments?

A. Yes, sir, without an instrument of this character, yes, sir.

[fol. 9053] Q. In Cleveland?

A. Yes.

Q. What for instance?

A. Ohio State; foreign make instruments.

Q. In your savings you have added and included all of the instruments in the State have you not?

A. That is right.

Q. Which the A. T. & T. never purchased or paid for?

A. No, they are ready to replace them at any time we wish them to be replaced.

Q. Mr. Rhodes, in his exhibit had seven per cent depreciation. You have an eight per cent depreciation. Why the difference?

A. I cannot account for his seven per cent, but I do know that our eight per cent is representative of what our depreciation for the type of apparatus that the instrument is a part of—That is, the sub-station account.

Q. How do you arrive at that per cent?

A. From studies and from various——

Q. Let me put the question this way, Mr. Kositzky. Do you arrive at that by finding out when you got the instrument and when you junked it?

A. I took the same rate for an instrument that we used for a sub-set to which the instrument is attached. That is eight per cent.

Q. Now what is the life of a receiver?

A. It is usually about four or five years.

Q. It is junk within four or five years; is that right?

A. No, I won't say that, but its life in one locality is four or five years.

[fol. 9054] Q. Then if an instrument actually exists 20 years, but is moved five times during that period, you say its service life is four years?

A. Yes.

Q. Will you tell me why you need to estimate the service life of an induction coil as less than say 40 years?

A. That again is computed the same as the rest of the equipment. If the instrument, the induction coil in one locality is removed and it is good, why the salvage will be considered accordingly, so whether it is 20 years in one locality or four years in each of five localities, it will be practically the same.

Q. Its service life is four years in either instance?

A. The salvage makes up the other point. The depreciable amount is the same.

Q. As a matter of fact induction coil should last for 40 years, that is, its construction would enable it to live for 40 years or have a service life for 40 years?

A. If you consider the material only, I don't know. It may be longer than that. It may be less than that.

Q. Now, because that is a part of a telephone which is moved every four years, you make the depreciation on that induction coil the same as the thing to which it is attached; is that right?

A. We must necessarily do that, Mr. Shuler.

Q. I don't care about that, Mr. Kositzky. I want your answer yes or no?

A. The depreciation is computed on the basis of life in years in one locality. If it is used over and over again the [fol. 9055] salvage takes care of the difference.

Q. Then, if in Cleveland people were of a roving nature and the average removal was once a year, your depreciation would be how much?

A. The depreciation in that case, of course, would be higher, because you are losing the installation every time and you are losing its removal every time.

Q. What do you mean by losing the installation and the removal? Did you answer the question?

A. No. If the instrument were in service one year, the life would be one year and the salvage would probably be 90 plus per cent.

Q. Oh, Mr. Kositzky, Mr. Crunden is going into that. Can't you answer my question yes or no?

A. I don't believe I can.

Mr. Burr: He could not answer that one by yes or no.

Mr. Shuler: Why not? Didn't you give him the answer? How do you know, Mr. Burr, what questions Mr. Kositzky can answer?

Mr. Burr: Read the previous question.

Mr. Shuler: I don't care about it.

(Question read.)

A. They would wear out and be moved.

Q. Let us cut out all of this and let Mr. Kositzky answer my question and not go into any learned discussion of depreciation. Why do you need to estimate the service life of an induction coil as less than, say, 50 years.

[fol. 9056] A. Because they are not in place or in service in one locality 50 years.

Q. But that does not mean that induction coil is junked at the end of a lesser time?

A. Oh, it may be junked in much less time. It may be destroyed by fire. It may be obsolete. There may be a dozen reasons why it will be thrown away.

Q. Why do you estimate the life of a receiver at less than, say 20 years?

A. For the same reason.

Q. Why?

A. The receiver is not in service in one locality on the average of 20 years.

Q. Why do you estimate the life of a transmitter at 20 years?

A. Same reason.

Q. Give the reason?

A. Because it is not in service in one locality for an average of 20 years.

Q. But there are no parts of the mechanism or any of them or the material or any of them which would cause them to be or have a service life of only four years is there?

A. Four years is our experience, four or five years, and I don't know what else I can answer.

Mr. Shuler: Read the question to Mr. Kositzky.

(Question read.)

A. You mean total service life or service life in one locality?

Q. Total service life?

A. The total service life would be more than that.

Q. Certainly. Now how much more?

A. I don't know. That depends upon the art, destruc-
[fol. 9057] tion for various reasons, wear and tear, obsolescence. We only go by our experience as to the service life in a particular locality.

Q. Do you in your considerations take into consideration your judgment as to the future?

A. Yes, together with our experience in the past.

Q. During the years in which there have been changes in patterns in transmitters and receivers you have been working toward a standard of transmission have you not?

A. Yes, sir.

Q. And you have been adjusting your entire plant to that standard both in cables, wires, central office equipment and toll lines have you not?

A. Yes, sir.

Q. What changes can you conceive in the transmitter that would compel the Bell Companies with their many millions of dollars investment adjusted to the present transmitter, to change the type at a total loss or at any loss?

A. I can only say that the advancements have been made in the past right along and I have every reason to believe that there will be advancements in the future.

Q. Do you expect those advancements to cause you a loss on your present plant?

A. On the transmitters and receivers, you are talking about now?

Q. The changes in those, yes?

A. We don't own them so it would not be our loss. It would be the A. T. & T. loss.

Q. I said, are you considering any changes in transmitters or receivers in the near future which would cause you a loss, a considerable loss, in your plant or equipment other [fol. 9058] than the receiver and transmitter?

A. No.

Q. You can't?

A. I can't right at this minute.

Q. Have you had any experience of great changes that caused a loss to the rest of the equipment or plant?

A. No, they usually acted the other way, as benefits rather than losses.

Q. In the matter of repairs at two per cent, do you include the repairs of breakages in the receiver shells and transmitter mouth pieces?

A. Those repairs that the A. T. & T. furnish.

Q. You consider the repairs that the A. T. & T. furnish. How do you know what that per cent is?

A. In certain cases, I have had the amount in dollars and reducing that to a per instrument I get this percentage that has run from one and one half to over two per cent.

Q. That is the actual experience of the A. T. & T. in the repairing of shelves and transmitter mouth pieces; is that right?

A. That is the repairs of the transmitters, receivers, and induction coils which they are responsible for.

Q. Who furnishes the repairs to the mouth pieces and receiver shells?

A. At one time they were furnished by them, by the A. T. & T. Company; I don't know whether they are furnished by them now or not.

Q. Do you include the repairs of breakages to the receiver cords in this two per cent?

A. No.

Q. You don't?

A. No, sir.

Q. Do you include any attention that may be given by [fol. 9059] the trouble man at the subscriber's premises?

A. No, sir.

Q. Is your statement as to the average excess of five per cent sets of instruments above stations actual or estimated?

A. It is computed at first actually about four and a fraction per cent, I used five.

Q. You say it is computed at what?

A. It was computed—It was actually a little less than five and I took it as five.

Q. What is it?

A. From actual information?

Q. From your experience in your Bell Company you carry that excess do you?

A. That is, in the plant, yes. As I stated before they were the instruments at private branch exchanges and where the party chooses to have two receivers rather than one, instruments at switchboards. It is nearly five per cent in excess of the subscribers' stations.

Q. Will you get us the actual figures of stations and sets of instruments for Toledo, Dayton, Massillon and Cleveland?

A. I cannot answer.

Q. Can't you get it for us?

A. I am not sure. I would have to see whether it is available.

Q. Can you divide the extra instruments into classes, as for instance, company switchboards, P. B. X. switchboards, extra receivers and so on?

A. I might be able to do that.

Q. Mr. Kositzky, do you mean that in Cleveland you have 105 per cent or rather an excess of five per cent of sets [fol. 9060] of instruments above the stations there?

A. Yes, sir.

Q. And under the contract you have to pay 75 cents a month for all over three per cent don't you?

A. No, that is three per cent not in service, three per cent in stock. We are given instruments—we are entitled to instruments for every use we may make of them in the service of the company, and in that also is included those instruments used in linemen's test sets. Now on top of that A. T. & T. permit us to have in our stock three per cent additional, and the Western carry three per cent on top of that.

Q. Why should an extra receiver be classed as an extra set of instruments?

A. It would not be an extra set. It would be an extra receiver.

Q. Your statement shows an extra stock of these instruments to insure continuity of supply of six per cent, is that right?

A. Yes, sir.

Q. You don't actually do that, do you in Cleveland or in any city in Ohio?

A. I don't know as to any particular city, but we do in the stock in the state as a whole. I think that is right. Supply is a sort of flexible thing. It is liquid.

Q. That would be thirty thousand sets for the State would it not?

A. Three per cent of——

Q. No, six per cent. Your statement is six per cent?

A. That is right.

Q. Stock of instruments to insure continuity of supply, [fol. 9061] six per cent additional?

A. That is right.

Q. You don't carry actually six per cent?

A. We carry about three and the Western Electric carry about three.

Q. Does the Western Electric also carry for you an excess of the other part of the instrument, for instance, the stand on which these instrument sets are placed?

A. Of course, they are our suppliers and they carry a stock of supplies and we carry a stock of supplies.

Q. Mr. Kositzky, do they carry for you as many telephones as they do of these instrument sets?

A. I don't know.

Q. Do you carry as many telephone sets in excess as you do instrument sets?

A. Sometimes more and sometimes there is a shortage and we have less of course.

Q. What in your opinion would be the largest per cent of telephones that you ever carry in excess?

A. I could not answer that.

Q. Ever as much as six per cent?

A. Oh, yes.

Q. Do you often have on hand thirty thousand extra telephones for the State of Ohio?

A. Yes. At one time we had more than that. And then there are times again, when there is a shortage and we haven't them and we have much less than that.

Q. What would you say would be the average, Mr. Kositzky?

A. Why, I really don't know.

Q. Of what other classes of material, if any, does the Bell carry a stock equal to six per cent in excess?

[fol. 9062] A. Well, we carry hardware, cable, poles, wires,—I won't say six per cent, but we have a very large investment in supplies.

Q. Mr. Kositzky, supposing you have a million poles in plant, do you carry in stock six per cent or 60,000 poles?

A. I don't know.

Q. Do you think that you carry anything like that number in supply?

A. I couldn't answer that.

Q. Do you think you carry an excess of six per cent of anything, an excess of anything equal to six per cent of the sum in the plant?

A. I think so.

Q. What for instance?

A. I think we carry—I am only giving totals—We have a supply account of considerably over a million dollars of supplies that we carry, and I don't know just how that is divided.

Q. What is it?

A. I don't know how that is divided between the various items.

Q. What is your total plant value of that same material?

A. I couldn't tell you offhand.

Q. Don't you know that it is in the neighborhood of seventy-five or eighty millions?

A. You are speaking now of the total property in place including real estate.

Q. Yes?

A. We would not carry any real estate, buildings, switchboards, conduits. You are speaking of material now. Material is a small part of it. The plant material is a small part of that seventy-five or eighty million dollars.

Q. You testified as follows: "What effect does the re- [fol. 9063] tirement of those Ohio State instruments have upon the capital account of the company?" Your answer was, "Whenever one is taken out the plant an amount equal to what is supposed to be on the books is written off of the books; in other words, the books are reduced as fast as these come out." Are we to understand from this answer that the amount is written off of the capital account?

A. Yes, sir.

Q. And an instrument is substituted then from the A. T. & T.

Mr. Shuler: I think I am through. I am not certain, but if not it is only two or three questions. You will have that duct thing figured out tomorrow?

The Witness: Yes. What is that? The four and six duct?

Mr. Shuler: You and I can figure it out together.

The Witness: All right.

And thereupon the further hearing of this matter was adjourned to Thursday, April 24, 1924, at ten o'clock.

[fol. 9064] Thursday Morning Session

April 24, 1924.

And also G. A. Kositzky, resuming the stand for further cross examination, continued his testimony as follows:

Cross-examined by Mr. Shuler:

Mr. Shuler: Mr. Burr, when can you give that Metropolitan area?

Mr. Burr: Mr. Shuler, I meant to ask you whether you referred to the Cleveland Exchange area?

Q. Mr. Kositzky, what is the number of telephone stations in the Cleveland Metropolitan district or the Cleveland Exchange district?

A. About 160,000.

Q. Now, Mr. Kositzky, you testified it would be about $11,500,000 that would be expended this year by the Ohio Bell Company; is that right?

A. Yes, sir.

Q. What are just a few of the larger items constituting that expenditure?

A. One very large item is our routine expenditure of putting in telephones and the incidental work necessary in connection with that, like stringing short spans of wire and poles.

Q. Rather in the nature of equipment and materials?

A. That is over $4,000,000 in itself.

Q. Which? The equipment and materials?

[fol. 9065] A. That is the money expenditure necessary to put them in place, yes.

Q. Now, those materials and equipment, from whom are they purchased?

A. They are largely from the Western Electric Company.

Q. From the Western Electric Company?

A. Yes.

Q. Do you contract with them at one time for a large amount?

A. We do it this way, Mr. Shuler. As soon as we know what our construction program is, we sort of divide that into principal items, like number of poles, conductor feet of cable, number of telephones, private branch exchanges, and we give them that information before the year in which the materials are required, and then we notify them from time to time as to how rapidly we want that material delivered.

Q. Is it delivered in large quantities at a time?

A. Reasonably large quantities. Of course, we also have specific requisitions or an order for the items, but they know about how rapidly they are to supply those things.

Q. Deliveries are made in amounts of as high as $200,000 at one time, are they?

A. Oh yes.

Q. And more?

A. Yes, their monthly billing is sometimes much more than that.

Q. Does the Ohio Bell Telephone Company ever advertise for bids when they want to make any purchases of material or supplies?

A. Not in all cases.

Q. Do they ever advertise for bids?

A. Yes.

Q. How frequently do they advertise for bids?

A. I might explain that: advertising for bids in connec-
[fol. 9066] tion with conduit work or buildings——

Q. I am talking about material and supplies only.

A. No.

Q. You never advertise for bids for material and supplies?

A. Not telephone material so called, no.

Q. Equipment?

A. No.

Q. And all the purchases that you make from the Western Electric are made without any advertising whatever?

A. That is right.

Mr. Burr: Mr. Shuler, do I understand these questions of yours are now directed to the proposition or the sugges-

tion that the Western Electric contract is not a beneficial one to the American Company?

Mr. Shuler: No, that it is an illegal contract.

Mr. Burr: That it is an illegal contract?

Mr. Shuler: That the acts of the Ohio Bell Company are illegal and in violation of the Clayton Act.

Mr. Burr: You do not contend that the rights of the Ohio Bell Company after that contract are not beneficial to the Ohio Bell Company, do you? I ask that for this reason——

Mr. Shuler: We have asked for that information to find out whether it is or not.

Mr. Burr: If you will excuse me and let me finish my remarks, early in this controversy the question of the payment under the license contract and the question of the benefit accruing to the Ohio Bell Company under the Western Electric's contract were adverted to from time to time, and it was stated in the record that there was no issue [fol. 9067] raised as to the fairness of the Western Electric contract and the fact that it was of advantage to the Ohio Bell Company to have that contract. Now, if you are going——

Mr. Shuler: Who said that?

Mr. Burr: I don't remember. Probably you were not here. But that is in the record. If you are going to open up that question. We would like definite information on the subject, because it is contrary to what I understand the record to be thus far, and we have proceeded on the theory that the Western Electric contract was conceded as a beneficial one to the Ohio Bell Company.

Mr. Shuler: Well, I don't know a thing about that myself, speaking only for myself.

Mr. Burr: We would like to know at this time whether you are going to raise that issue, so that we might be governed accordingly.

Mr. Shuler: I understood Mr. Gentsch's motion to raise the issue, that is, he wants the American Telephone & Telegraph Company in this hearing either as a party or as a volunteer witness to furnish just that very thing.

Mr. Burr: Oh, that has nothing to do with the Western Electric contract.

Mr. Shuler: Yes, that is what his motion is, as to the Western Electric contract. My motion that I made is the

books of the A. T. & T. for the four and one half per cent contract. Mr. Gentsch's motion is to have the A. T. & T. made a party, so that the contract between the Western [fol. 9068] Electric, or rather the dealings between the Western Electric and the associated companies may be examined, and we can see whether or not the Western Electric Company is making an exorbitant profit.

Mr. Burr: Now, he did not do any such thing if you will pardon me for saying so. If you will read his remarks you will find he did not even say Western Electric Company so far as I can remember.

Mr. Shuler: Mr. Chairman Poor asked him to reduce his motion to writing and I just happen to have read his motion.

Mr. Burr: This is a very late date at which to inject an issue in the case——

Mr. Shuler: As far as my questions are concerned, Mr. Burr, it does not raise that question as I see it, but I do understand that Mr. Gentsch's motion will raise that question.

Mr. Miller: Nobody on this side of the table seems to know anything about that supposed concession.

Mr. McConnaughey: What record do you refer to, Mr. Burr?

Mr. Burr: There are so many records Mr. McConnaughey, that it is a little difficult for one to remember.

Mr. McConnaughey: The question was never raised in the Dayton record, that is, it was never discussed one way or the other. You asked the specific question at one time whether we questioned the four and one half per cent contract. We said we did. That was the only discussion or [fol. 9069] anything of that kind we ever had.

Mr. Burr: Well, it is not too late to look at the record and see what it says on that question.

Mr. Shuler: I am through with that question, so that we can look up the record at our leisure.

Commissioner Poor: Yes, do that.

Q. Mr. Kositzky, do you have telegraph service working over your telephone circuits?

A. Yes.

Q. In your savings for the phantom circuits is there included the telegraph service?

A. No, sir.

Mr. Dotson: May I ask a question on that, Mr. Shuler?

Mr. Shuler: Yes.

Mr. Dotson: You speak of the service in a limited sense, Mr. Kositzky. Is that applicable to all exchanges or is it in a greater degree in use in some exchange areas than others?

The Witness: Well, that is primarily in the toll plant, Mr. Dotson. It would not be applicable to the exchange but very, very slightly.

Mr. Dotson: I have observed in the Toledo exchange area that all telegraph accounts seem to be certified to the Bell Company and presented along with the Bell Telephone Company's bill where that service has come in over a phone call.

The Witness: We have no commercial telegraph service at all. That is merely a commission we receive for transmitting messages over the telephone to the telegraph office, I think, what you have reference to.

[fol. 9070] Mr. Dotson: I just wondered whether that collection was confined to the service of the telegraph company that was received over telephone service.

The Witness: I believe so although we do get some leased line revenues where some of our long distance circuits, that is, the telegraph facilities of our long distance circuits are leased to brokers and large merchants and so forth; but it is not what you might call a commercial program. It is merely Morse facilities.

Q. Mr. Kosiztky, what are the present average prices of telephone equipment as compared with the pre-War level?

A. They are considerably higher.

Q. How much would you say?

A. Pre-War, 1915, '16, along in there you mean?

Q. That is what I understand?

A. I would say about 40 per cent.

Q. About 40 per cent higher?

A. Perhaps 50; along in there.

Q. Do you know whether or not the Ohio Bell Telephone Company charges off more today for depreciation of plant and equipment than it did five years ago, the Ohio Bell Telephone?

A. I don't just exactly understand that question. You mean the same unit of equipment?

Q. No, I don't mean that. I mean the composite.

A. That is, for one section of switchboard would we charge off more today than we did before?

Q. No, composite plant; for the plant.

[fol. 9071] A. In the value per unit or in dollars.

Q. Per cent I said.

A. Well, if there was more plant I would charge off more, of course.

Q. Your percentage is the same, but your total amount is probably different. About the percentage I am talking. What percentage do you charge off for plant and equipment in the Cleveland exchange area today?

A. I don't know.

Q. You don't?

A. No.

Q. Now, as a constructing and operating telephone engineer, don't you know anything about the development of the art of telephony except as you receive information or advices from the General Staff?

A. Yes, sir.

Q. You do?

A. Yes.

Q. Do you know anything about what the independents are doing in other states?

A. To a very limited extent.

Q. Very limited. Now, in your estimate of savings by the use of the phantom circuit, are those savings based on the assumption that the General Staff originated them and are to be given the sole credit for savings?

A. The General Staff——

Q. No, please answer my question.

A. We got the information from the General Staff.

Q. Will you please read my question, and then answer it yes or no.

(Question read.)

A. Yes, if I might add to my answer——

Mr. Shuler: No, you have answered it.

Mr. Burr: Just a moment please. Let him finish his [fol. 9072] answer.

The Witness: I might add to my answer that the General Staff gave us the information and developed so far as I know the practical use of the phantom circuit.

Q. Then I understand you to say that the General Staff told you that they developed the phantom circuit.

Mr. Burr: He didn't say any such thing.

The Witness: No, I didn't. Mr. Rhodes can probably better answer that than I can.

Mr. Shuler: Read his answer.

(Answer read.)

Q. The General Staff gave you the information; what do you mean by that?

A. They gave us the diagrams, which show the transposition methods of physical circuits to make a phantom possible. Together with that they gave us the specifications for the equipment, phantom coils necessary at each end of the physical circuit, to make the phantom possible. That information we received from the General Staff.

Q. They developed so far as you know the phantom circuit; what was the development that the General Staff made?

A. You are asking me questions that Mr. Rhodes is more competent and qualified to answer than I.

Q. Then you are not qualified to answer what the developments made by the General Staff were?

A. No, sir, not in detail.

Q. You testified that there were 18,765.18 miles of phantom circuits in the Ohio Bell system; is that right? Yesterday you testified to that, didn't you?

A. 18,765.18 miles.

[fol. 9073] Q. How many miles of physical toll circuits in the state?

A. I don't know. I haven't that information.

Q. Can you get it for us?

A. Yes.

Q. You will get it for us?

A. Yes, I can get it for you. The miles of physical toll circuits——

Q. In the system?

A. The Ohio Bell system.

Q. Yes.

A. All right.

Q. Now, Mr. Kositzsky, don't you know as a matter of fact that the independent manufacturers came out with phantom circuits about 1902; don't you know that inde-

pendent manufacturers came out with phantom coils about 1902 or '03?

A. No, I do not.

Q. Don't you know that they were installed on independent lines about that time?

A. I don't know that they were.

Q. Do you know Sergius P. Grace of New York?

A. Yes, sir.

Q. What is his position with relation to the New York Telephone Company?

A. I think his position with the New York Company now is similar to Mr. Williams with this company.

Q. What is that?

A. He is sort of on special work in connection with valuation work. At one time I think he made depreciation studies for the New York Company.

Q. He was a former independent man, was he not, Mr. Kositzky?

A. I am not certain. He was with the Pittsburgh Company in years gone by, but that is a Bell Company.

Q. If he testified before the New York Public Service Commission that the manufacturers came out with phantom [fol. 9074] coils, I think around 1903 or '04 or something like that, what would you say as to whether or not that was probably true.

Mr. Burr: I object to that.

Commissioner Poor: The objection is well taken. I think that objection is well taken.

Mr. Shuler: It is a purely hypothetical question.

Mr. Burr: I know, but what difference would this witness' opinion of what Mr. Grace may have said as to its truth make?

Mr. Shuler: He was an independent operator.

Mr. Burr: Well, that might be.

Mr. Shuler: Note an exception.

Q. Now, in your savings on the 22 gauge wire did you give the General Staff credit for all units of cable, irrespective of size?

A. Just what do you mean?

Q. Well, I mean this. There is 22 gauge cable; you have simply 22 gauge cable; then you have it in pairs?

A. Yes, in sizes.

Q. And originally, I believe, there were in 150 pairs, were there not, or maybe lower?

A. Not in Ohio.

Q. I am talking about the art now, Mr. Kositzky.

A. Oh, there were various sizes used by these various companies. They had their own standards. I know Philadelphia used 240 and 480. St. Louis had a 120, 240 and 480; sort of a standard with that company.

Q. Yes, but I say they are in many different sizes from that up to the 1200 pair size; is that right?

A. Yes.

Q. Now, in your savings did you give the General Staff [fol. 9075] credit for developing the 22 gauge wire in all sizes?

A. What do you mean by wire?

Q. Cable?

A. You mean the manufactured product.

Q. Sure.

A. Now, wire has been used in sizes of 22 and smaller as wire long before the art of cable was known.

Q. Certainly. I am talking about the 22 gauge cable in all sizes; is that intelligible?

A. All sizes used in Ohio?

Q. Anywhere—no, in Ohio.

A. We got the information from the A. T. & T. Company and I gave them credit for it.

Q. And you gave them credit for the whole development, from the smallest units to the largest units?

A. That is right. I gave them credit for the savings because they gave us the information.

Q. And if independent manufacturers originally put out the 22 gauge wire, and originally put out the lower sizes from 400 down, then your estimate is incorrect at least to that extent, is it not?

Mr. Burr: I object to that.

The Witness: No, it is not.

Q. It is not?

A. No.

Mr. Burr: The question is argumentative anyhow.

Q. Mr. Kositzky, in determining the average service life of a plant, do you determine it from your knowledge of the plant and other similar plants?

A. Those are some of the factors that enter in.

Q. Those are some of the factors, aren't they?

A. Yes.

[fol. 9076] Q. Do you also consider any information that is available as to what the life on the average of the property now in service is going to be?

A. Yes, that enters in.

Q. That enters into it also, does it not?

A. That is a factor, yes.

Q. Do you consider the condition of the property involved?

A. I don't know as that is really a factor.

Q. You do not think that is a factor?

A. It might be to a very limited extent.

Mr. Shuler: I am through. I think some of the other counsel have questions.

Commissioner Poor: Have any of the other counsel any questions?

Cross-examination.

By Mr. Laylin:

Mr. Laylin: I would like to ask a few questions if I may.

Q. Mr. Kositzky, you have had approximately 19 years of experience with various associated companies?

A. Yes, sir.

Q. You are at present Chief Engineer of the Ohio Bell?

A. That is right.

Q. Now, let me ask you what facilities has your department of the Ohio Bell for research?

A. We have no facilities for research.

Q. In other words, your department has no facilities to [fol. 9077] make exhaustive tests and analyses?

A. No, it would require a larger force, of course, additional space and apparatus and a considerable addition to our organization to conduct work of that character.

Q. You depend, do you not, for that kind of service upon the General Staff?

A. That is right. Some of the other manufacturers—I think Mr. Shuler mentioned some yesterday—have such laboratories, such as the General Electric and the Westinghouse. They have laboratories and they conduct experiments. But the Ohio Bell Company relies entirely upon

the A. T. & T. for that information. Now, we could not do all of the research work that the A. T. & T. perform.

Q. You depend upon their recommendations involving your methods of work and also in the equipment and purchase of the materials?

A. We depend upon the development work, yes.

Q. You are familiar, are you not, with the fact of the ownership of the Western Electric Company by the American Telephone & Telegraph Company?

A. Yes, sir.

Q. Now, can you cite any instance in which an associated company or the Ohio Bell Company has purchased a particular class of equipment or material from outside sources?

A. Yes.

Q. Wait until I finish my question.

A. Pardon me.

Q. Of which the Western Electric Company had a similar article, in other words, a competitive article?

A. Yes, I have personal knowledge of purchases of poles [fol. 9078] directly from the supplier and not through the Western Electric.

Q. When was that?

A. That was a few years ago. It was handled by me personally. And we have purchased and are purchasing apparatus right along from suppliers other than the Western Electric Company.

Q. Can you detail what they are?

A. Yes, we purchased considerable for the city of Canton.

Q. What was that you bought?

A. That was Central Office Equipment, additions to the equipment that was there.

Q. That is, additions to the independent equipment which was there in existence?

A. That is right. And I might state that the Stromberg-Carlson Company are manufacturing all small switchboards for us. The Kellogg are manufacturing instruments, substations for us of the magneto type.

Q. Just a moment——

Mr. Burr: It is responsive to the question.

Mr. Laylin: My question——

Mr. Burr: Read the question.

Mr. Laylin: Let me finish what I have to say. I asked

him as regards articles which are competitive in character, and I want him to have that still in mind is all.

The Witness: We purchased considerable equipment for Cleveland from the Stromberg-Carlson people; also for Toledo from the Kellogg people; and in Canton from the Kellogg factory, that is, Central Office equipment, types similar to which the Western Electric make.

Q. The Western Electric Company makes stuff that would be usable in the same way as this?

[fol. 9079] A. Very much the same, yes, and we recently purchased an entirely new installation at Massillon of an automatic type, and the Western make automatic, but of a different type; it is of the panel type. This is the step by step type that we purchased for Massillon.

Mr. Burr: Did you say where that was purchased?

The Witness: From the Stroger Automatic—from the Automatic Electric Company of Chicago. And at Youngstown we purchased nearly a million dollars worth of equipment from the same company. And the Western Electric Company make- automatic equipment and we could have purchased from the Western.

Q. Weren't all those purchased, Mr. Kositzky, to harmonize the new equipment with that which was already in place?

A. Not in Massillon.

Q. Not in Massillon, but in the other instances?

A. In Youngstown it was an entirely new installation and in the Bell Building. There was an installation similar to that in another building.

Q. Mr. Kositzky, I want to read here from your testimony and will ask you when I have included to indicate whether this is correct or not?

A. Yes.

Q. This relates to a description of your experience only. After having gone into the employ of the New York and New Jersey Telephone Company you then after a time went to the Pacific coast, as I understand it?

A. Yes, sir.

Q. And returned again to New York later?

A. Yes, sir.

Q. You stayed in New York and then you say in 1911 "I was transferred to St. Louis as plant engineer of the old [fol. 9080] Bell of Missouri, which was a Bell Company

operating mostly in St. Louis and vicinity." And then you say, "And the following year I was transferred to Kansas City."

A. Yes, sir.

Q. And after detailing your work there and describing the consolidation of various Bell companies you stated that, "I was transferred at this time to St. Louis, reporting to the operating vice president, and had general supervision of the plant operations and also inventory and appraisal work." Then after going into your appraisal work in some detail you said in response to this question by Mr. Burr, "After your service with the Southwestern Company what did you do?" And you replied, "I was then transferred to Chicago and promoted to the position of Chief Engineer for the Central Union Company; this was in 1919." And then your last change was stated as a transfer to Cleveland to the position of Chief Engineer of the Central Union?

A. Of the Ohio Bell.

Q. Of the Ohio Bell; now is that correct?

A. Yes, sir.

Q. What I would like to know is, who transferred you?

A. Those transfers were, so far as I know, due to several people.

Q. Well, can you guess who? I will give you one guess.

Mr. Burr: I don't think the witness ought to guess.

A. My first move to the Pacific Company, Mr. Bloom, who was at one ti-e President of the Ohio Bell Company, was detailed by the Pacific Company to perform a certain job on the Pacific coast, and he took three men with him, and I happened to be one of the men, and I credit that move to [fol. 9081] Mr. Bloom.

Q. Who was he detailed by?

A. I really don't know.

Q. What was his position then, could you say?

A. Mr. Bloom at one time——

Q. At that time.

A. I think at that time he was the division plant superintendent of the New York and New Jersey Company, of the Jersey Division at Newark.

Q. You do not know who detailed him to go to the Pacific coast?

A. I don't know unless it was at the request of the Pacific Coast Company for help.

Q. A request for whom?

A. The same as we were in trouble in Ohio with our merger I asked for help, and I naturally went to the A. T. & T. Company and they furnished me a man.

Q. Your assumption is that he was detailed by the A. T. & T. Company and you went with him to assist him?

Mr. Burr: He hasn't any knowledge on it.

Mr. Laylin: Oh well, let him answer.

The Witness: I don't know except that the A. T. & T. may have asked for help and Mr. Bloom might have been recommended. Whether it was directly through the A. T. & T. or some other source I don't know.

Q. When you went to the Pacific coast did you have any negotiations with that company prior to your going?

A. Not with that company, no, sir.

Q. When you were transferred from New York to St. Louis how was that effected?

A. That was through negotiations with a gentleman by the name of S. L. Gilman, who was General Manager of the [fol. 9082] Bell of Missouri and also the Missouri and Kansas.

Q. Who had the negotiation?

A. Between Mr. Gilman and myself.

Q. You applied for a job?

A. Not exactly. Mr. Gilman interviewed me when I was in College for a position and I presume he still remembered me. He was at one time an employee of the Western Electric Company.

Q. Who transferred you to Kansas City?

A. That was by Mr. Gilman.

Q. Aren't they separate companies or weren't they at that time separate companies?

A. Only in this way. They had a common general manager. They were separate companies, but they had a common general manager.

Q. Tell us which companies were which there.

A. The Missouri and Kansas Company and the Bell of Missouri had at that time Mr. S. L. Gilman for their general manager. Each had its own operating organization under the general manager. They had a common president, I believe a common general auditor, and certain other common officials.

Q. Then you were transferred back to St. Louis; is that correct?

A. Yes, sir.

Q. After leaving Kansas City?

A. Yes, sir.

Q. When you were transferred to Chicago who transferred you?

A. My negotiations then were with Mr. Bloom, who was at that time the President of the Central Union.

Q. You had no instructions to go?

A. Oh, it was optional with me. I was merely offered the [fol. 9083] position, and I accepted it. It was a promotion to a better position than I had, and I very gladly accepted.

Q. Was the same thing true when you moved from Chicago to here?

A. When the Central Union was divided into state organizations, it was a matter there primarily of allocating the employees from Chicago to the various states, and I was fortunate to draw Ohio.

Q. Who allocated you here?

A. That was during the time that Mr. E. A. Reed was president, who in the meantime had been promoted to the presidency of the Ohio Bell.

Q. You did not discuss matters at all with New York?

A. I did not, no, sir.

Q. You did not?

A. I don't know if anyone else did or not.

Cross-examination.

By Mr. Hagelbarger:

Q. You have an Exhibit No. 4 of toll fundamental plan; do you recollect that?

A. I think I had an Exhibit showing a bulletin.

Q. Showing what?

A. A bulletin, or a general engineering circular prepared by the A. T. & T. which treats of the preparation of toll fundamental plans.

Q. You have testified also with relation to the value of exchange fundamental plans?

A. That is true.

Q. You practice the making of fundamental plans with the advice and assistance of the A. T. & T.?

A. Yes, sir.

[fol. 9084] Q. The essence of such fundamental plan or indeed of any engineering is to get your desired results with a minimum of expenditure, without waste of material or labor?

A. That is right.

Q. And in your telephone plans you make these careful studies so as to not construct too many ducts or too many pole lines or too many offices or any particular construction too large; is that true?

A. That is right; that is, economical size.

Q. So as to not have those you do construct too large?

A. Not too large; I would say large enough.

Q. Yes, large enough. Now, any construction man with experience in construction work in telephone plants and without any engineering assistance, if he had money enough, could build a telephone plant large enough for any given purpose, couldn't he?

A. If he — that without engineering plans, I would have my doubts as to the economy.

Q. You would have doubts as to the economies of the construction?

A. Yes.

Q. But he could build it large enough if he had enough money, couldn't he?

A. Yes, sir, he could also build it improperly and also too small.

Q. I am talking now about size. But if he did not study his needs and his economies in advance, he would waste a great deal of money very likely, wouldn't he?

A. He might, yes.

Q. In your engineering, you do limit your program and your building of ducts and lines and equipment according [fol. 9085] to the relation between costs and needs, do you not?

A. Yes, sir.

Q. You make your sizes and lengths and types of construction prove in?

A. Yes, sir.

Q. Just so far as possible?

A. Yes, sir.

Q. That is, unless they are expected to pay for themselves they are not constructed?

A. Not always.

Q. So far as possible I say.

A. Taking the exchange as a whole, there might be ragged edges where it is doubtful whether that particular construction would prove in, but we have to do it in order to give a universal service. But taking the exchange as a whole, it will wash out.

Q. But, generally speaking, that is true?

A. Yes, sir.

Q. You have some things in your plant that would not be there if they cost even twice as much as they actually do?

A. I don't know just exactly what you mean by that.

Q. There are some things in the plant that are there because of the low cost rather than because they are absolutely necessary and essential?

A. No, we would not build anything unless it was necessary and essential.

Q. My question would relate to those things that are there in place of something else, because of the cost of the two things?

A. We have a certain purpose to accomplish and we try to accomplish it in the practical and economical manner.

Q. And if one thing costs say twice as much as it now costs and the cost was in that respect prohibitive, you would try to use something else in place of it that did not cost so [fol. 9086] much?

A. That is right, to accomplish about the same purpose.

Q. Now, referring to your Exhibit 31 showing savings in exchange plant, as you have stated in your calculation of duct saving, you have taken the basis that wherever by use of cables of smaller gauge wires and more wires in a cable, you could have dispensed with a duct; you have assumed a saving of two ducts; is that true?

A. Let me just explain there.

Q. Did you say that yesterday in your cross examination?

A. I said something along that line.

Q. Now, does it need explanation?

A. I don't believe your question is exactly in line with what I answered.

Q. Is it substantially true as to what you stated?

Mr. Burr: Let him answer.

Mr. Hagelbarger: I am going to give him a full chance.

Mr. Burr: You have interrupted him twice.

The Witness: In connection with every occupied duct there are also unoccupied ducts, and the percentage filled

of a conduit system is about 50 per cent, and that is a practical and economical basis of experience over many, many years.

Q. But did you say that you were saving two ducts?

A. In this way——

Q. Where you were putting the cables into one duct?

A. In this way, Mr. Hagelbarger. If we had cables of half the number of pairs, requiring twice the number of cables, we would have twice the conduit system, which would take with it the idle ducts as well as the occupied ones in [fol. 9087] order to get the same place and have the same capacity.

Q. Do any of the bulletins of the A. T. & T. General Staff recommend the 100 per cent excess of ducts?

A. No, sir.

Q. In construction?

A. No, sir, that is a condition that cannot be avoided. Let me make that clear.

Q. Go ahead.

A. If we have requirements for a conduit down a particular street, we will say that the economical period, for reasons which, if you care, I would be very glad to explain, shows an eight duct run, eight compartments, with capacity ultimately of eight cables. We would not consider actually eight cables the first year after the conduit is laid. We would run one duct. We would then have one duct. Seven eighths of the ducts would be idle. We generally provide an emergency duct, and it would never be completely filled. And the cities also in Ohio usually require a fire and police cable. Six would be our maximum use. For the first year we would only have one occupied. Now, that, averaging over the state, 50 per cent filled, is rather a high efficiency in the conduit system. We could not lay four ducts unless we wanted to tear up the street shortly after that, leaving two ducts available for the city and for emergency, but we would build the conduit system for an economical period, taking into consideration the tearing up of the street, the restoration of the pavements and excavating and all that.

Q. What is that economical period?

A. Now, that depends. Where there is paving it is longer than where there is not paving, and in city streets generally we have paving. We look forward to about ten [fol. 9088] to eighteen years as an economical period for which to lay ducts.

Q. Now, may we not assume in a case where your engineering studies have determined for you the right number of ducts, or in some cases as you mentioned nine ducts instead of eight, your studies should show to be enough, that is, nine ducts in existence, with four ducts actually in use, on your savings calculation, as I understand, you could save one of the ducts in use, reducing the ducts in use, and the ducts normally worth while to hold in reserve on your plan of two for one to six, actually you have nine ducts or three times the number in use; how may we infer that you did not engineer for enough ducts in the first place or that you have too many ducts in the second place? Which of those two is true?

A. If I understand your question, Mr. Hagelbarger, you might have such a condition. On the other hand you might have a condition where you have to reinforce that conduit immediately because of the smaller number of pairs per cable, in which event you would have to go to the expense of taking up the pavement, restoring the paving and laying a parallel duct line either on that street or an adjacent street, so that you might have a case where the facilities would be there to take care of this additional cable, and yet you would have other cable where you would have to immediately make enlargements, and that latter is usually the case.

Q. You have not answered the question yet, have you?

A. Then I am sorry.

Q. Can you answer the question?

[fol. 9089] A. I haven't got the question. You better read it.

Q. The last part of the question is, may we infer that you did not engineer for enough ducts in the first place or that you have too many ducts in the second place.

Mr. Burr: Yes, but the last part of the question depends upon the first part of it, and if the question is to be repropounded to the witness I would like to hear all of it. There are several conditions in the question. Will you read it please, Mr. Stenographer?

Mr. Shuler: Yes, I will read the question.

Q. This is the question, Mr. Kositzky. May we not assume your case where your engineering studies have determined for you the right number of ducts, or as in some cases you mention nine ducts instead of the eight that your studies

show to be enough, that is, nine ducts in existence for four ducts actually in use; on your savings calculations I understand it, you could save one of the ducts in use reducing the ducts in use to three, and the ducts normally worth while to hold in reserve on your plan of two for four to six?

A. No, I don't get that at all.

Q. You don't? Didn't you practically say that in your cross examination yesterday?

A. Not reducing the ducts. I am merely saying the additional ducts we would have to have if we did not have nine or twelve hundred pair cable. I am not reducing the number of ducts at all in my saving. I am merely showing the additional conduit investment we would have to have if our cables were of the old type used prior to the develop-
[fol. 9090] ment of the fine wire and 912 and 1200 pair.

Q. Now, in Akron, Dayton and Toledo in the acquisition of the Ohio State System you have more conduits and ducts than you can use, haven't you?

A. I don't think so.

Q. How do you arrive at that?

A. In some localities we haven't enough.

Q. But in some of those cities you have more than you can use, haven't you?

A. Probably into the Central Office. I think there are cases of that kind.

Q. Have you made a study so that you can say to this Commission that there are not more ducts acquired from the Ohio State System than you can use?

A. Not in detail, but in general I think I can answer that question. The Ohio State built a conduit system for their needs. We built a conduit system for our needs. This was built some time ago presumably to last say ten to eighteen years. At the expiration of that ten to eighteen years, each company, if they continue, or one company now, would necessarily have to enlarge their conduit system, because the conduit is not built with capacity for the ultimate load but only for limited periods. So in order to continue growth, instead of going into the cities mentioned and building additional ducts, the ducts we find today is only an economical margin, and it is only about a fifty per cent occupancy, which is not unreasonable.

Q. You mean to say there will be a fifty per cent occu-
[fol. 9091] pancy in those three cities I have named after you get the consolidation of the two properties complete?

A. It averages out that way. We are not withdrawing many cables. Cables are all in use.

Q. Well, you have twice as many unused ducts for those cities?

A. You also have twice as many used ducts.

Q. Are you sure?

A. In some cases one plant is larger than the other, so that it would not be twice.

Q. Don't you know that it is entirely guesswork on your part in estimating how soon those ducts will be filled?

A. It is not entirely guesswork.

Q. Don't you know many of those ducts are not likely to be filled within the next fifty years?

A. I can't imagine any such conditions.

Q. Well, taking into consideration the cables with the larger capacity of these small wires?

A. All cables runs will give a larger capacity, but that does not mean we would have to reduce all cables there today.

Q. You are assuming that there will be no improvement in the fineness of the wire and reduction of the space necessary to be occupied by cables in ducts?

A. No, I am not. I understand there are further improvements of cable under way, and that will postpone the day of enlargement.

Q. It will postpone it for many years?

A. In some sections, yes. In others——

Q. Why do you say——

Mr. Burr: Let him finish.

Mr. Hagelbarger: All right. In others what?

[fol. 9092] Mr. Burr: You butt in and start in on a new question and drown out the witness' voice.

The Witness: In other sections again that would not be so where the capacity now is rather limited. It would be interesting to know that in a number of instances the conduit systems of the two companies do not follow the same streets or alleys. They are on alternate streets. So that in time if one company only had been in the field at the outset, they would have built conduits in those streets at a later date. So that it works out quite to an advantage to have these conduit systems. As I said, there are instances where they enter the office and the office is abandoned, and there are ducts there that will have to be written off of the books. But there are not many of those.

Q. Have you engineered these conditions in these cities or are you just speaking generally?

A. I have in Dayton.

Q. You have what?

A. In Dayton. I went into that to a limited extent, yes, sir.

Q. But only a limited extent?

A. Enough to satisfy ourselves of the possibilities of the use practically of all of that conduit.

Q. Is that the only place?

A. Yes, in Ohio.

Q. So that from the limited engineering attention you have given to the Dayton situation you have assumed to testify here with regard to the whole State of Ohio outside of Cincinnati?

A. I said in Ohio. I have made also studies of that character in Joppa, Missouri and in——

[fol. 9093] Q. I am talking about Ohio.

Mr. Burr: Just a moment. Let him answer.

Q. Did I ask you about Joppa?

A. No, you did not. You asked me about my studies of duplicate conduit situations.

Q. Here in Ohio?

Mr. Burr: Wait just a moment please. As I understood counsel he asked the witness whether or not he had made studies in other places and whether except as to Dayton it was not a mere guess. Now, the witness is proceeding to tell you where he has made other studies.

Mr. Hagelbarger: And I told him it is not responsive and I am going on to something else.

Mr. Burr: No, because he has a right to explain to you why it is not a mere guess. And that was what he was proceeding to do when you interrupted him.

Q. What has Joppa, Missouri, to do with Ohio?

A. We had a situation of two telephone plants of a reasonably good sized city, perhaps not as large as Dayton or Canton, about 8,000 telephones. I made a study of Kansas City, of the conduit system. St. Louis, Missouri has about 16,000 telephones. Topeka, Kansas has about 12,000 phones—at that time. And Wichita, Kansas and some other points—Dallas, Texas.

Q. This saving hasn't anything to do with Joppa, Missouri?

A. No, this is the possible use of conduit systems where they were built by two separate companies. Fort Worth is another case. Seattle, Washington another.

[fol. 9094] Q. Now, you have done no engineering in Toledo or Akron in regard to the use of ducts of the two companies?

A. No.

Q. And yet you have applied your savings plan to those ducts which have been acquired from the Ohio State system just the same as you have to the original Bell ducts?

A. No.

Q. You have not?

A. No.

Q. You are excluding those, are you?

A. I have merely stated this, that I have computed the additional ducts required, if we had to have more cables because of the fewer number of pairs that were taken.

Q. Over what period of years does your additional ducts required extend?

A. Cables as they exist today.

Q. Over what period of years does your number of ducts saved extend?

A. No period of years. Merely this. I have taken the cables as they existed to give us the same facilities we have today.

Q. When are you going to use these ducts you save?

A. They are being used right along, the ducts that are vacant, I mean.

Q. That is, you are filling up ducts every week or two?

A. Yes, sir.

Q. Do you know how many ducts unoccupied there are in the State of Ohio?

A. I said about fifty per cent. We are building new ducts every month.

Q. When were the first ducts constructed in Ohio, or do you know anything about it?

A. Only very generally. Sometime prior to 1900 or [fol. 9095] around 1900, along in there.

Q. Do you know how many of those ducts originally constructed are filled to capacity?

A. No, sir.

Q. Have you ever made any study of that?

A. I don't know that such a study would help us.

Q. I asked you if you ever made a study of it?

A. No.

Q. The Ohio Bell Company engineered the construction of ducts in Ohio previous to the use of these 900 and 1200 pair cables?

A. Yes.

Q. Isn't it a fact whenever a conduit and ducts therein are engineered in any particular street, is there a record made of the prospective length of life? When a conduit and the ducts therein are engineered for a particular street in the city, is there a record made of the time within which they will probably be required to be filled up to capacity?

A. No, sir. We merely follow the best engineering practice as to the size of ducts required at that time, so far as we can forecast into the future.

Q. You do that without reference to the length of time that in your opinion it will take to fill it to capacity?

A. You asked me about a record. We have no detailed record. But when we complete a conduit system we feel that we build it for the purpose of lasting a certain number of years.

Q. How many years?

A. From ten to twenty or ten to eighteen, as I testified.

Q. Well, that depends entirely upon the growth of the [fol. 9096] city, doesn't it?

A. Oh yes, that is what we take into account, the number of lines that will be required in that ten to twenty year period. We reduce that to cables and cables are reduced to number of ducts, and in that manner we determine the size of the conduit.

Q. Now, in this saving you are assuming that you are going to occupy the duct that you save first rather than the duct—the extra duct occupied last that you have saved, aren't you?

A. I don't know just exactly what you mean.

Q. You are figuring on a saving of ducts, aren't you, and you have given some figures here to this Commission on how much in money your saving in the State of Ohio in occupying ducts will be; that is, you have saved, we will say, one or two ducts in a conduit; you have saved those for future use; is that right?

A. No, not exactly that way.

Q. That is what it means, isn't it?

A. No, it means this, that if we had more ducts occupied because of the more cables necessary on account of the fewer number of pairs per cable, to get the same conditions we have today we would have to have this additional investment in conduit to give us the same condition we have today.

Q. Now, many of these ducts have in the larger wires, haven't they, cables with the larger wires?

A. Some of them, yes.

Q. Many of them?

A. Trunk cables, for instance; we are placing cables of that type with a larger wire as being a larger cable, and cables to remote points we are still using larger wire cable, [fol. 9097] which is still a standard cable for that use today.

Q. If it would require from ten to eighteen years to fill up the ducts in a conduit, then you want this Commission to take into account the saving of ducts when they are not now needed, don't you.

A. No, I don't believe I said that.

Q. Isn't that where you come out? Isn't that the result?

A. I think not.

Q. Isn't that the result of your statement?

A. No, not exactly. Our investment in Ohio today would be this much greater in conduit.

Q. How do you know it would?

A. According to my computation.

Q. With the vast number of unoccupied ducts in the State of Ohio?

A. That is a psysical condition that exists and that you cannot get away from.

Q. It is always fifty per cent, isn't it?

A. I wouldn't say it is always that. It might be more and it might be less. But it is within a few per cent of fifty.

Q. So that you want this Commission to allow this on the theory that all of the ducts are now occupied?

A. No.

Q. You don't?

A. No, I merely wanted this Commission to see what has been saved in Ohio, because of taking advantage of the improvements in the art of cable so far as——

Q. There is nothing saved until the ducts are all full and you are required to build new conduits and ducts?

A. You must now misunderstand me. There are certain conduits that have one out of eight in use; there are certain [fol. 9098] others that have six out of eight in use; so that there are many others that would have had to be enlarged and this investment made if it had not been for this saving or this development of cable.

Mr. Hagelbarger: That is all.

Cross-examination.

By Mr. Miller:

Q. Mr. Kositzky, referring to the early part of your testimony on cross examination as to method of appraisement of jointly used poles, I want to see if I understand you correctly. As I understand it, the pole that is jointly used by your company and another company and is owned by the other company, that is not set up in your appraisal at all?

A. No, sir.

Q. On the other hand if that pole is owned by your company it is set up in your appraisal as though it had not been used by any other company?

A. That is right.

Q. What do you do when the ownership is disputed?

A. We go according to our record.

Q. In other words, if another company claims that pole, and you claim that pole, you set it up in your appraisal because you claim it?

A. We set it up according to our best record, yes, sir.

Q. That is what you did in the Canton case?

A. Yes.

Mr. Burr: It is not in evidence that there is any place [fol. 9099] where they are in dispute.

Mr. Miller: Oh yes, it is.

Q. Don't you know that the ownership of a considerable number of poles in Canton is disputed?

A. I don't know whether there is or not. I know there was such a case in Dayton, and from the final outcome as I understand the testimony the company, you might say, had rather underclaimed than overclaimed.

Q. In Dayton?

A. Yes.

Q. Don't you know that there are a considerable number of poles the ownership of which is claimed by your company and the Northern Ohio Traction & Light Company?

A. I don't know that it is true.

Q. Don't you know that your company arranged with the Ohio Power Company to check over the jointly occupied poles in order to determine the ownership of the poles between your companies?

A. I don't know whether it was or not. It possibly was. It was done in Youngstown for our own information. There was certain work of that kind done in Cleveland. I wouldn't be a bit surprised if it was done in Canton.

Q. Don't you know that before that work advanced very far so many disputes arose that the Bell Telephone Company refused to continue the work and the Ohio Power Company went on and completed its investigation?

A. No.

Q. You didn't have any part in that work?

A. No, sir.

Q. You didn't delegate any men to do it?

A. No.

Mr. Miller: That is all.

[fol. 9100] Recross-examination.

By Mr. McConnaughey:

Q. Mr. Kositzky, you stated you had made a detailed study of the duct occupancy situation in Dayton as between the Ohio State and Ohio Bell systems?

A. Yes.

Q. Was that study reduced to writing?

A. No, it is not. I don't think it is. We merely have information as to the systems, and there is no report written on it if that is what you mean.

Q. No.

A. No report made on it.

Q. Will you give us the details of that study?

A. I have no objection.

Q. Can you do it now?

A. I haven't it here, no.

Q. When can you do it?

A. I could not answer that, Mr. McConnaughey.

Q. Well, we have a date set for cross-examination of you and others in the Dayton case, I think week after next. Can we have it in advance of that?

A. I will be glad to look into that, Mr. McConnaughey.

Mr. McConnaughey: That is all.

By Mr. Shuler:

Q. Did you get my figures over night, Mr. Kositzky?

A. What figures were those. I thought we worked them out last night.

Q. What we talked about over here.

A. I thought we worked them out last night.

Commissioner Poor: Any other questions of this witness? [fol. 9101] Are there any more questions of this witness?

Mr. Dotson: I just want to call his attention that I note by the record that I made a request for some information to this effect; I find that I asked you to furnish complete supporting data of cost of fundamental plan of Toledo, showing the portion of the costs incurred by the A. T. & T. Company and the amount incurred by the Ohio Bell Company.

The Witness: I haven't that, Mr. Dotson. In the first place that was made in 1919 when I was in Chicago or 1920, along in there, and I haven't the details of that cost, but I can tell you about what it would cost to make such a fundamental plan including the commercial forecast, commercial survey, and the fundamental plan layout, including the office locations, conduits, lay-outs, sizes and so on. It would be between 25 and $50,000, the complete fundamental plan.

Q. There was, however, a plan made, as I understood?

A. Yes, sir.

Q. It was with reference to that plan that I desired this information. Would it be much of a hardship or really difficult to secure that, Mr. Kositzky?

A. Yes, it would. I have been trying to get that since your request, Mr. Dotson. I am sorry that I have not had a great deal of success.

Q. As a matter of fact you have not succeeded in getting it yet?

A. No, I have not.

Q. If you can you will furnish it?

A. I think I testified as to the number of man days spent [fol. 9102] by the A. T. & T. Company. I believe that is in the record. I don't know the salaries those men were paid or their traveling and living expenses while on this particular job away from home.

Q. I don't remember whether you stated who prepared that fundamental plan?

A. That was one of the first ones made and we had considerable assistance from the A. T. & T. Company on that Toledo plan.

Q. But it was not made under your supervision?

A. Oh yes.

Q. It was after you came in?

A. It was under my supervision and with the assistance of the A. T. & T. Company.

Mr. Burr: Were you then in Chicago or Cleveland?

The Witness: I was in Chicago at that time.

Mr. Burr: If there are no other questions I should like to postpone the reexamination of Mr. Kositzky until we have had an opportunity to go through his testimony and also in order that the other witnesses here from a distance may be examined and excused. It has occurred to me in the few remaining minutes at the morning session. I would like to ask Mr. Kositzky a few other questions in order to clear up a few points before we go away.

Commissioner Poor: You have a half an hour. Tomorrow will end up our time.

Mr. Burr: I only wanted to ask Mr. Kositzky at this time on the matter of the stock of instruments on hand as compared with other material on hand.

The Witness: The stock of instruments, as testified, is six per cent, and that compares very closely with the other [fol. 9103] supplies carried by the company. For instance, we have supplies and materials not in service in round numbers of about $2,000,000 worth in Ohio. And taking the plant in which that material is used, save the outside plant and the substation plant, it figures something like $61,000,000 in place. Now, in that $61,000,000 there are such items as labor and freight and many other expenses. So, reducing that sixty one millions to materials only, it would be about half or about $30,000,000 of that sixty is strictly materials. Now, thirty million into two millions is about six and two thirds per cent. And I might say that

the materials that are used like routine materials would be more than six per cent and others like conduits would be less.

By Mr. Burr:

Q. You were asked whether or not in your judgment the Ohio Bell Company would have made no progress without the services of the American Telephone & Telegraph Company. What have you to say about that?

A. Undoubtedly we would have made some progress, but it would have been at the Ohio Bell's expense, and we could not have made the progress that was made in the manner in which it was made. That is, we could not have had the development forces as employed by the A. T. & T. who handle it for a very large number of companies, and the expense would have been much greater for such development that we could have made.

Mr. Shuler: I move that that all be stricken out.

Q. What have you to say——

Mr. Shuler: I move that that all be stricken out, because [fol. 9104] this witness does not know a thing about what he is testifying to except, if at all, for the last five years.

Mr. Burr: Rubbish. He has been in the service nineteen years.

Mr. Shuler: Not in Ohio.

Mr. Burr: He has qualified to answer it.

Mr. Shuler: Another reason I object is, this witness in answer to a question of my own said that he knew nothing about the independent telephone companies of the state. Now, how can he testify as to where the Ohio Bell Company would have been without the four and one half per cent contract, when he knows nothing about where the independent telephone companies are who have not been paying the four and one half per cent contract.

Mr. Burr: I submit the answer is proper.

Mr. Shuler: Besides he said he knew little, but very little, about the trend and improvements in other businesses in the United States during the last year, including the Electric Light & Power Companies.

Q. Now, I will ask you another question.

Commissioner Poor: Wait a minute. Of course, that question covers a period of time longer than this witness

has been with the Ohio Bell Company. If the question is meant to cover the time he was actually with the Ohio Bell Company, I think the objection to that part of it is not well taken.

Mr. Shuler: May I make another suggestion? While we did not take the time to go into detail as to all of the things [fol. 9105] he has claimed his savings on, I submit that this Commission should decide from Mr. Kositzky's testimony as to the fact that he knew nothing about what the General Staff had done on the 22 gauge cable nor on the phantom circuits.

Mr. Burr: He is not a member of the General Staff.

Mr. Shuler: I mean to say this, that this witness' testimony on cross-examination has shown conclusively that all he knows about what the General Staff has done is what somebody told him they had done. He personally could not tell me one thing that the American Company had done with relation to the 22 gauge cable or the improvement thereof, and could not tell me one thing that the American had done on any improvements thereof or on the phantom circuits, and I insist that this witness has shown an absolute ignorance of the actual work, if any, done by the American staff except so far as somebody has told him. Also let me call your Honor's attention to this one thing——

Commissioner Poor: The Commission has ruled on your objection.

Mr. Shuler: You intimated it might be good for five years.

Commissioner Poor: Your objection is sustained beyond that period, when this witness came with the Ohio Bell Company.

Mr. Burr: Just addressing myself a moment to the testimony of counsel which has just preceded——

Mr. Shuler: No, it was a recitation of your witness' testimony.

[fol. 9106] Mr. Burr: The witness Mr. Rhodes has testified as to what the American Company did with reference to the development of the phantom circuits and the fine gauge wire. Mr. Kositzky is not a member of the General Staff.

Mr. Shuler: May I ask you, Mr. Burr, to state precisely what Mr. Rhodes said as to the 22 gauge wire?

Mr. Burr: No, I would not undertake to quote the record on the subject.

Mr. Shuler: Do you admit that he said they did nothing——

Commissioner Poor: If you gentlemen want to argue this out between yourselves all right, but I do not see that there is anything before the Commission.

Mr. Burr: I am simply answering a statement which was uncalled for and which was made by counsel for the other side. Mr. Rhodes has testified what the American Company did in that respect. Just to set ourselves straight with this Commission, Mr. Kositzky is not a member of the General Staff. He did not perfect the phantom circuits nor the fine wire cable. He is not here for the purposes of stating to this Commission what services his company has received from the American Company. The fact that the services were offered and were taken advantage of and the extent to which they were taken advantage of and the savings resulting from the use of those suggestions what he is talking about. Now, I merely inject that here in order, if possible, to clear up part of the misconception which seems to me to be in the minds of counsel for the city of Cleve-
[fol. 9107] land. Mr. Kositzky is not the man who developed the fine wire cable. He has not posed as a member of the General Staff or as having anything to do with the development of the cable. He has, however, shown this Commission the fact that the suggestion for its use did come from the American Company and the savings to the Ohio Bell as the result of those suggestions and the use of that cable. That is all I have to ask at this time.

Mr. McConnaughey: Mr. Commissioner, at the request of Mr. Gentsch and on his behalf and on behalf of others, in his absence I want to renew the motion he made to Mr. Rhodes' testimony in reference to this witness' testimony, that all of the testimony that he has given with reference to the value of these services and the savings because of them be stricken from the record.

Commissioner Poor: We will take that motion under advisement.

[fol. 9108] And also A. B. Crunden, recalled as a witness for the purposes of cross examination, testified as follows:

Cross-examined by Mr. Dotson:

Mr. Shuler: It is understood that Mr. Kositzky is not excused, because of the extra data that he is to furnish.

Q. Mr. Crunden, you testified in this case in Chief February 28th of this year and at that time you stated that your position with the American Company was general supervisor of accounting methods, and that you had occupied that position for a period of two years. That is correct?

A. Yes, sir, approximately two years.

Q. Now, prior to the employment in the position that you mention with the A. T. & T. Company you were engaged in accounting and statistical work for about 25 years, as I remember?

A. The 25 years would include the time with the A. T. & T. Company.

Q. Yes.

A. Yes, sir.

Q. Your first experience in work of this kind with a telephone company was in 1910?

A. Yes, sir, at the beginning of that year.

Q. At which time you went into the employ of the American Company and were stationed in Chicago as general bookkeeper of the Chicago Telephone Company; is that correct?

A. Yes, but the American Company had nothing to do with that.

[fol. 9109] Q. Had nothing to do with it?

A. No, sir, I was hired by the Assistant Auditor of the Chicago Telephone Company.

Q. What was the Chicago Telephone Company at that time?

A. It was one of the associated companies of the Bell system, operating in and around Chicago.

Q. That was prior to the break-up of the Central Union Telephone Company and the Central Group here of Bell Company associate units?

A. Yes, it was prior to the formation of the Central Group.

Q. Was the relation of the Chicago Telephone Company to the American Company practically the same then as now, as an associate company?

A. Yes, sir.

Q. Who did you say secured your services as bookkeeper for the Chicago Telephone Company?

A. Mr. Drew, who was at that time assistant auditor of the telephone company.

Q. Had he any connection with the General Staff at that time?

A. No, sir.

Q. There was a General Staff at that time of the A. T. & T. Company?

A. Yes, there was.

Q. The same as now?

A. Yes, sir.

Q. How did you learn that the Chicago Telephone Company at that time was an associate company of the A. T. & T.?

A. By conversation with the men in the office, the other bookkeepers.

Q. Did you meet in your work as bookkeeper for the telephone, the Chicago Telephone Company, the representatives of the General Staff of the A. T. & T. in connection with your work?

A. Yes, sir.

[fol. 9110] Q. And that connection was in the nature of supervising your work, was it not?

A. No, sir, no, there was no supervision offered. It was the recommendation of accounting methods on which they had been working and which they offered for our adoption.

Q. These representatives that you speak of were from the accounting and methods division of the A. T. & T. General Staff?

A. They were, yes, sir.

Q. The same department that you are in now?

A. Yes, that is true.

Q. They were rendering at that time the same service that you render now in behalf of the General Staff?

A. Yes, sir.

Q. And these representatives you say would come to Washington from time to time and confer with you and the other bookkeepers as well with reference to the various methods of accounting and the forms of bookkeeping and arrange for the installation of their suggestions in the work of the office that you were in?

A. Yes. When I say they arranged for the installation, that does not mean that they used any pressure upon us to make the installation. They simply explained what they had, and we were free to accept it, modify it or reject it as we saw fit.

Q. Did that attitude pertain to everything that came under your notice through the General Staff? Wasn't there anything at all that the General Staff suggested there that it considered necessary, and that because it was considered necessary by the Staff, it was, therefore, adopted. [fol. 9111] A. I should say no if I understand your question properly.

Q. Now, at the time you went with the Chicago Telephone Company the American Company developed a new and a more accurate accounting system to meet the increasing demands of the business of the company, that is, the Chicago Company, as well as the A. T. & T. Company, and it was because of that, was it not, that you were brought into Chicago and put into the position, you took?

A. Yes, sir, I think that was the principal reason that they looked for an outside—the Chicago Telephone Company looked for an outside man at that time.

Q. And you did go there and you installed that system in the Chicago Telephone Company?

A. Yes, I did a considerable part of the work. I cannot claim credit for all of it.

Q. How long were you with the Chicago Company?

A. From 1910 to 1918 inclusive, I think.

Q. About eight years?

A. Yes.

Q. Prior to the time that you went with the Chicago Telephone Company where were you working?

A. I was employed by the Transcontinental Passenger Association, one of the Railway Bureaus, and my position there was accountant and cashier.

Q. Where were you located?

A. In Chicago.

Q. And that immediately preceding your going with the Chicago Company?

A. Yes, sir.

Q. How long were you in that position?

A. Seven years.

Q. And that seven years and the time you have been

with the telephone companies, beginning with the Chicago [fol. 9112] Company, constitutes the period of your work in the capacity that you are engaged now?

A. I did accounting work before that.

Q. You did?

A. Yes.

Q. Independent or with somebody or for some company?

A. I was with a company. It was a British firm, known as Henry Gaze & Sons.

Q. Located in this country?

A. Their headquarters were in London, and they had branches in New York and Chicago, and the principal part of my employment was in New York, but I was employed by them in Chicago from 1899 to 1903, inclusive. I did accounting work and auditing work and inspection work for that firm.

Q. After you terminated this connection with the Chicago Company you then were transferred to the position of Auditor of Disbursements of the Central Group of the Bell Telephone Companies, located at Chicago, were you?

A. Yes, sir.

Q. When did that change take place?

A. Let's see. I think that was 1912, the middle of 1912.

Q. What were your duties in that position, your active duties?

A. For some time after the formation of the Central Group I was the general bookkeeper and statistician of the group, and at a later date I was assistant auditor of disbursements.

Q. This Central Group included what companies?

A. The Chicago Telephone Company, the Wisconsin Telephone Company, the Michigan State Telephone Com- [fol. 9113] pany, the Central Union Telephone Company and the Cleveland Telephone Company.

Q. Did you mention the Illinois Bell Telephone Company?

A. Well, the Illinois Bell Telephone Company of today is the Chicago Telephone Company of that time. The name was changed.

Q. You are speaking of the Chicago Telephone Company in the present use of the word or term.

Mr. Burr: No, you did not let Mr. Crunden finish his answer.

Mr. Dotson: Didn't he?

Mr. Burr: No.

Q. Was there something more?

A. As I understand it the Illinois Bell Telephone Company of today is simply the Chicago Company of that time, with the name changed.

Mr. Burr: Plus the Central Union Telephone property in the State of Illinois.

The Witness: It includes more property, but as a corporation it is the same corporation with the change of name.

Q. When you were with the Chicago Telephone Company the exchange area did not include the entire State of Illinois?

A. No, sir.

Q. But today it does?

A. It does, yes.

Q. The balance of the State that was outside of the Chicago Telephone Company exchange area was occupied by the Central Union Telephone Company, was it not?

A. Yes. I do not think the Central Union occupied the entire balance of the state, but it occupied the major part of the balance.

Q. And it occupied all of the State of Indiana?

[fol. 9114] A. That was occupied by Bell Companies, yes, sir.

Q. All of the State of Ohio?

A. All of the State of Ohio except the Cleveland company.

Q. And Cincinnati?

A. And that portion of Eastern Ohio which was served by the C. & P. Company.

Q. It did not include the Cincinnati and Surburban Company?

A. Cincinnati was also excluded, yes.

Q. Now, you were located in Chicago while occupying the position of Auditor of Disbursements for this Central Group of Bell Companies?

A. Yes, sir.

Q. What was the relation existing between this Central Group and the A. T. & T. Company at that time other than

the relation that exists now between the American Company and its associates or constituent companies?

A. I do not think the relationship was any different than it is now. The five companies mentioned were brought together because it was felt that it would result in some economies so long as the companies did not grow too large. I think economy was one of the main thoughts in that.

Q. You thought it would bring about more economy?

A. I don't know. You see I was not in an executive position at that time.

Q. Do you know whether that was part of a plan or that in fact was the plan arranged by the A. T. & T. Company, that the associate companies should be grouped in the manner that they were grouped?

A. No, I haven't any information on that point, Mr. Dotson. I do not know where the inspiration came from. [fol. 9115] Q. In accordance with the operations of the A. T. & T. Company in reference to the business and operations of the associate companies it would have been perfectly natural that a plan of that kind would emanate from the American Company, would it not?

A. I think if the A. T. & T. Company felt it was to the advantage of the associated companies to go into such a plan that they would have recommended it, and in that sense it would have been entirely natural.

Q. All of the associate companies did go into the group arrangement?

A. Into that particular group; you mean the five companies involved?

Q. Yes, sir, into the Central Group, as you call it?

A. Yes, sir, they did.

And thereupon a recess was had until 1:30 o'clock P. M. of same day. (Thursday, April 24, 1924)

[fol. 9116] Thursday Afternoon Session

April 24, 1924.

And also A. B. Crunden, resuming the stand for further cross examination, continued his testimony as follows:

Cross-examined by Mr. Dotson:

Q. Mr. Crunden, in your testimony in chief you mentioned as the Central Group of the Bell Telephone Com-

panies consisting now of the Illinois Bell Telephone Company, the Central Union Telephone Company, the Wisconsin Telephone Company, and the Michigan Telephone Company and what is known as the Cleveland Telephone Company; isn't there a mistake in that, in so far as the Central Union Telephone Company is concerned?

A. Did I use the word "now"? Is the word "Now" in the record? If I said, "now" it is wrong.

Q. It is in the record?

A. There must be some outline that looks like that. The Central Group came to an end in 1919 or the early part of 1920, I think, so that I could not say it was there now truthfully anyway.

Q. If you meant it then at the time that you were transferred to the position of Auditor of Disbursements for the Central Group, then it did include the Central Union Telephone Company, but did not include the Cleveland Telephone Company, did it?

A. Originally it included both the Central Union and the Cleveland Telephone Companies, and then the Central [fol. 9117] Union was placed in the hands of receivers, and it was taken out of the group. That, I think, was in 1914. In 1919, I think it was, the group was broken up and the companies disassociated as to their management. Oh, I said consisting of what is now——

Q. But you do not want it to stand that way?

A. Yes, that is all right. I mean that what was then the group now consists of these other companies.

Q. I do not seem to get the understanding you do, but nevertheless I understand what you mean probably.

A. Yes. It is immaterial.

Q. Now, from the Central Group of the Bell Telephone Company, where you occupied the position of Auditor of Disbursements, you were transferred to Cleveland as the General Auditor of the Cleveland Company?

A. Well, I remained at Chicago. That was at the time the headquarters of the Central Union and Cleveland Companies were maintained in Chicago.

Q. You remained in Chicago but you were transferred, I mean to the position of General Auditor of the Cleveland Company?

A. That is correct, Mr. Dotson.

Q. When were you transferred to that position?

A. I think it was the end of 1919.

Q. About the time that the Central Group was broken up?

A. Yes, sir, it was at that time.

Q. Now, at the same time you were also given the position of Vice President and General Auditor of the Central Union Telephone Company?

A. About that time, yes, sir.

[fol. 9118] Now, going back to the other answer, we must be in error then in saying that you were transferred to the Cleveland Company at the time of breaking up of the Central Union or Central Group, which included the Central Union.

A. I was transferred to the position of General Auditor of the Cleveland Company at that time. I had previously been Auditor of Disbursements of the Cleveland for a number of years.

Q. That is because you held the position of Auditor of Disbursements with reference to all of the members of the Central Group?

A. Yes, sir.

Q. Each and all of them?

A. Yes, sir.

Q. But now your duties were changed when you were given the position of General Auditor of the Cleveland Company?

A. Yes, sir.

Q. You no longer rendered any service after that as Auditor of Disbursements for the Central Group?

A. No, sir.

Q. Now, you performed the duties of General Auditor of the Cleveland Company and as Vice President and General Auditor of the Central Union Telephone Company from the same office located in Chicago?

A. I did, yes, sir.

Q. These duties were performed jointly and continuously until the Central Group was disbanded and the present organization created?

A. Until the Central Union was disbanded?

Q. Yes.

A. I was there for one year. About the time I became General Auditor of the Central Union, the property in Indiana was sold to the Indiana Bell. That was just about the time I took office. Late that year, as I recall it, the [fol. 9119] Ohio Headquarters were established here and

the office force was sent over to Columbus, and shortly after that happened I left the employ of the Central Union Company.

Q. When you were transferred to offices in Columbus your relationship and position continued the same as it was in Chicago?

A. Yes, sir, for a short time. I never lived in Columbus.

Q. When was that relationship changed and to what relationship?

A. Why I left the Central Union—the Cleveland Company, to go into the employment of the American Telephone & Telegraph Company.

Q. Now, how did you secure the position as Vice President and General Auditor of the Central Union Telephone Company? Through what agency was that position created and you selected for it?

A. My understanding is that Mr. Bloom who was President of the Central Union Company made a request of Mr. Sonney, who was President of the Chicago Telephone Company, that he be allowed to approach me to see whether I would like to take a vacancy which had occurred because Mr. Pritchard, then General Auditor of the Company, was going to Indiana as General Manager of the Indiana Bell Telephone Company. And Mr. Sonney agreed to that and the proposition was made to me first through Mr. Garvey, who was General Auditor of the Illinois Bell Telephone Company. He suggested that I take it over and go down and talk with Mr. Bloom myself, which I did. And I agreed to take the position.

Q. Then after you served in thos- capacities the A. T. & T. Company called you into the employ of the General Staff [fol. 9120] at New York, where you have remained ever since?

A. No, the A. T. & T. did not call me. What actually happened was this, that Mr. Bloom asked me whether I would rather go to Ohio or go to New York, and I told him I would rather go to New York, because my father was an old gentleman, and I did not expect him to live very much longer; I would rather go to New York.

Q. Who is Mr. Bloom, you say?

A. Mr. Bloom was president of the Central Union and the Ohio Bell Company.

Q. And it was through his suggestion, you say, that you chose the position you have held with the A. T. & T. Company?

A. Not at his suggestion, no, but he asked me which I would rather do, and I said I would rather go to New York.

Q. Then you did go to New York, and took the position?

A. Yes, sir.

Q. Did you consult with anybody else with reference to it than Mr. Bloom?

A. After I had told Mr. Bloom that, Mr. Heiss, controller of the American Company, on a visit to Chicago, asked me whether that had been the conversation and whether I would be willing to work for him. And I told him that I would.

Q. Who was Mr. Heiss, the man at the head of the department you are in?

A. Yes, sir.

Q. Now, you said in your testimony in chief that when the Central Union Company was divided up "I was transferred to New York and became Assistant Chief Statistician of the American Telephone and Telegraph Company, and [fol. 9121] occupied that position for about a year, and then assumed my present duties." Then as a matter of fact your present position you did not take until you were there about a year.

A. Yes, roughly a year. But I don't remember just how long that was. Roughly a year.

Q. And in this testimony you referred to the same incident that you have just now related, of your passing from the Central Union Telephone Company to New York to the General Staff?

A. Yes, sir.

Q. You said on page 520 of your testimony that everything that the Central Union Company owned in the State of Ohio was taken over by the Ohio Bell. Does this include the Cleveland Exchange?

A. That was Mr. Burr's statement, and as I understand it, the property of the Central Union Company was sold to the Ohio Bell and the Ohio Bell as a corporation is the same as the former Cleveland Telephone Company, there being merely a change in the name of the corporation.

Q. Well then, the Ohio Bell actually took over more than the Central Union Telephone Company property in Ohio?

A. You mean down to this time it has taken over more.

Q. Yes.

A. Yes, it has taken over the C. & P. property.
Q. Where is it located?
A. The Ohio Bell?
Q. No, the C. & P.
A. The C. & P.? Why, the headquarters of the Chesapeake and Potomac Company are at Washington, and the name of the corporation is the Chesapeake & Potomac Telephone Company of West Virginia.

Mr. Burr: I may say, Mr. Dotson, that those matters to which you are now referring are matters of record with the [fol. 9122] Commission.

Mr. Dotson: I haven't any thought of pursuing that inquiry further.

Mr. Burr: Probably the records are the best evidence, but there is no objection to asking the witness on the subject also. The name of the Cleveland Telephone Company was changed to the Ohio Bell, because it was easier to take a company which was already in existence than it was to form an entirely new company, and that was the only reason which I can now recall for the fact that the name of the Cleveland Telephone Company was changed to the Ohio Bell Telephone Company, and then the Ohio Bell purchased the Central Union, rather than that a new company be formed which would purchase both the Cleveland and the Ohio Bell.

Q. Reference has been repeatedly made and the expression employed of "The Bell system" in testimony here. We are to understand that that designation includes the associated companies that have been mentioned here, I think about 25, and the A. T. & T. Company, that whole group of associated companies?

A. The term is frequently used that way. Sometimes it is used in a more inclusive sense, to include the Western Electric and the connecting companies in which the associated companies have an ownership. It is rather a loose term.

Q. In the testimony here the meeting that we are justified in giving to it is that which I have just mentioned; it includes the associated companies, consisting of about 25, the operating companies about the country, such as the Ohio [fol. 9123] Bell, and the A. T. & T. Company?

A. That would be correct as regards to my testimony, yes, sir.

Q. Then it would be fair to say briefly that the Bell system includes the associated companies so called as the operating units of the system, and the American Company, that is the A. T. & T. Company, as the executive unit of the system, exercising supervision and directing authority over the operating units?

A. No, I think that would create a radically wrong conception of the proper relationship. The A. T. & T. Company does not exercise executive jurisdiction over the associated companies, but the executives of the associated companies so far as my knowledge goes have used their own discretion.

Q. You mean that the executives of the various operating units exercise the executive duties pertaining directly to the operating business of the unit; is that true?

A. Yes, sir.

Q. Then beyond that is the executive duty exercised by the A. T. & T. Company through its General Staff in its work in behalf of the associated companies such as you have described?

A. I did not get the verb in that question.

(Question read.)

A. I do not know that it is correct to call those executive duties. They are more of an advisory relation.

Q. They have to do with the administration of the conduct of the business of the associated companies, have they not?

A. They do, but without conferring any authority to con- [fol. 9124] duct the business of the company. For instance, take my own case. I am continually in contact with various general auditors and I give them my views about what it may be desirable for them to do in my opinion. But I cannot exercise any direction over them at all and they are free to agree or disagree with me as they see fit.

Q. I am not alluding now or referring in any sense to your personal executive authority, but I am referring to the executive authority of the A. T. & T. Company which it expresses in some degree through the work and services of the Staff.

Q. You mean that the work and services of the Staff create an instrument of executive control over the local companies?

Q. In other words, the General Staff has taken over a

lot of work that by virtue of the manner in which the Bell system is organized the operating units are not prepared or equipped to do; that is true, isn't it?

A. Yes, that is true.

Q. Now, those duties with reference to the entire system are performed and discharged by the A. T. & T. Company?

A. That is correct, yes, sir.

Q. Now, those duties relate directly and vitally to the management and the conduct of the business of the operating unit?

A. They have a vital connection, yes, sir.

Q. And no other unit in the system is prepared or equipped to perform those duties other than the A. T. & T. Company itself?

A. That is correct.

[fol. 9125] Q. Now, it is true the cooperative activity of all of those units of the Bell system, that the business of the Bell system so-called is carried on from day to day and year to year?

A. Necessarily.

Q. That was evidently then the purpose of organizing the system in the manner that it has been organized and is being operated at this time.

Mr. Burr: I object to that. The purpose is to be determined from the facts.

Mr. Dotson: That is one way probably. But there are still other ways:

(Question read.)

Q. I am referring to the matters that you and I have been discussing here as the things which the various units do. Now, the manner in which those things are done was the purpose of organizing the system in the way it is organized.

Commissioner Poor: He may answer, assuming that he knows the purpose.

Mr. Dotson: I am assuming that he does.

Mr. Burr: Note an exception.

The Witness: It is natural that a system so nicely adapted to the situation could not happen by chance. It must have been planned. Of course, my knowledge as to what the people in the early days of the telephone business had in view is derived largely, for example, second hand—for ex-

ample the annual reports of the company, where the growth of the system is repeatedly explained.

Q. Prior to the effecting of the present organization of [fol. 9126] the Bell System the various units, such as the Central Union Telephone Company and others, that operated over more than one state, were subject to the Interstate Commerce Commission; that is a fact, isn't it?

Mr. Burr: Read that question.

(Question read.)

The Witness: I presume so. I would not be any special authority on that.

Q. Now, that was especially true with reference to their accounting methods of the system?

A. As I understand it, it is immaterial whether——

Q. Well, if they were subject to the jurisdiction of the Interstate Commerce Commission, they would have to comply with the orders of the Commission with reference to the system of accounting as to the interstate as well as to the intrastate business which they conducted, because they were engaged in interstate business?

A. Well, the jurisdiction of the Interstate Commerce Commission in respect to accounting, as I understand it, applies to all companies which handle any interstate business. So I do not think the situation would be changed, whether the company operated in two states or operated in one state, as long as interstate messages were handled over its plant.

Q. Isn't it a fact that the present Bell system has placed all of the interstate business in the hands of the A. T. & T. Company, and that the Ohio Bell Company is not doing any interstate business?

A. I cannot say as to that. I know cases where the associated companies are doing interstate business, of course, [fol. 9127] many of them.

Q. You do not know whether the Ohio Company is or not?

A. Doing interstate business?

Q. Yes.

A. Why I have no doubt it is doing interstate business in this sense,——

Q. How?

A. That I presume it has some calls on toll lines which go over the border. I am not positive about that.

Q. You do not operate toll lines or interstate business; that is, it has no toll lines running to Indiana or Chicago or Michigan or to Pennsylvania?

A. You mean where its own lines terminate in the other state?

Q. Yes.

A. That may be possible.

Q. Yes.

A. But they participate in a haul that begins in one state and terminates in another, as to which they furnish part of the toll line.

Q. Yes, but they are not operating any interstate business at all; they carry the messages, the service, to the state line and terminate there, and their responsibility and jurisdiction over it terminates at the state border?

A. If I understand you, that is equivalent to saying that they own no plant outside of the limits of Ohio. Is that the idea?

Q. That is the idea, and the Ohio Bell Telephone Company exercises no control over properties, telephone properties, outside of Ohio?

A. I don't know that of my own knowledge. It may be so. I know that they are principally, if not wholly, confined to the State of Ohio.

Q. Then as a matter of fact one of the purposes in organizing the Bell system in its present form was to remove [fol. 9128] or take away from the various operating units the interstate business and take that out from under the jurisdiction of the Interstate Commerce Commission and subject only the one unit, that is, the A. T. & T. to the Interstate Commerce Commission.

Mr. Burr: I object to that. I do not understand the purpose of it in the first place. The question whether or not the Ohio Bell Company is subject to the jurisdiction of the Interstate Commerce Commission is a question of law and I think it is in evidence all through this record that the Ohio Bell Telephone Company is subject to the jurisdiction of the Interstate Commerce Commission.

Mr. Dotson: This has to do with the purpose of this organization. There was evidently some purpose behind it that gave birth to the system.

The Witness: Is it your understanding that all of the Bell Companies operate exclusively within the limits of a single state?

Q. I have assumed that that probably was true, and especially true of the Ohio Bell.

Mr. Kinnison: Might I ask a question, Mr. Dotson?

Mr. Dotson: Yes.

Mr. Kinnison: Did I understand you to mean, Mr. Crunden, there were several cases when the call originating in Ohio might be conveyed to the Ohio territory line on Bell property and then relayed on to the next state?

The Witness: No, sir. That may be the case, but I do not know whether it is or not. But I do know that the Ohio [fol. 9129] Bell owns toll lines and that these toll lines are hooked up with other lines.

Mr. Kinnison: Actually used for interstate commerce?

The Witness: Yes, sir, yes, sir. For instance, I talked to my home in Brooklyn this morning.

Mr. Kinnison: Did you use the Ohio Bell line or the A. T. & T.?

The Witness: I don't know. I know that there are such lines. And, Mr. Dotson, the New England Telephone Company operates throughout the states of Massachusetts, Vermont, Maine, and I think parts of some other states, and the New York Telephone Company operates in New York and New Jersey and a portion of Connecticut.

Mr. Burr: Give some more examples.

The Witness: The Southern Bell Company operates in Florida, Alabama, Georgia, North Carolina; and the Cumberland Telephone Company operates in Tennessee, Mississippi, Louisiana; and the Southwestern Bell Company operates in Missouri, Arkansas, Texas and Kansas.

Mr. Burr: What about the Northwestern?

The Witness: The Northwestern operates in several states similarly. So does the Mountain State Company, which operates out in the Rocky Mountain Region, running all the way from El Paso, Texas, up to the Canadian line. And the Pacific Tel. & Tel. operates from San Diego to the Canadian Boundary.

Mr. Kinnison: The A. T. & T. is taking over the toll busi- [fol. 9130] ness in Ohio, is it not?

The Witness: I don't know, Mr. Kinnison, what it is doing.

Q. On page 521 in your testimony you speak of the comptroller's department performing in behalf of the associated companies what might be called the research and development work which is required with respect to the statistical, accounting and certain financial functions of the business. Do you mean by this statement that it is required by the American Company for the associated companies?

A. You mean, do I wish to convey the impression that methods which the comptroller's department conceives and develops are made mandatory upon the associated companies, that the associated companies are required to accept anything that the comptroller's department puts out?

Mr. Dotson: I think I better ask the stenographer to read the question. I think you will understand it if he reads the question.

(Question read.)

A. Required——

Q. You have used the word there "required". I say what do you mean? I want to get its proper setting.

A. The way I paraphrased it was the sense in which I understand it, and my answer is no, that is, that they do not require it in that sense. I mean the research and development work which is undertaken is work that is practical and useful and in that sense it is required. It is required by the [fol. 9131] needs of the business.

Q. Well, that is——

A. My meaning would be equally well expressed by the word "desirable" or by the words "demanded by the needs of the business."

Q. You aim to do only those things that are necessary and, therefore, required?

A. That is the idea, yes, sir.

Q. Now, it is the duty of the A. T. & T. Company, acting in the capacity that we have described heretofore, to discharge its duties of seeing to the necessities of these companies and performing that as a part of its duties as a member of the Bell system?

A. You mean their necessities in the way of the recommendation of the most efficient and economical methods, and the answer is yes.

Mr. Kinnison: Mr. Crunden, on page 533 of the record, Mr. Dotson in cross examination, in an interruption of your

direct examination, said, "The system of accounting which you have testified to was that system which the American Company desired to be observed by the associated companies." To that you said, "Yes, sir."

The Witness: Where is this? 533?

Mr. Kinnison: Yes, of your record.

The Witness: Well, my answer "Yes, sir" had reference there for the purpose of unifying the system of accounting, and I understand that your point is there that the way in which the question was phrased led me to state by inference that the A. T. & T. Company managed and operated the local companies.

Mr. Kinnison: The inference I drew was that the asso- [fol. 9132] ciated companies adopted it, because the American Company desired it. Is that what you mean?

A. No, they adopted it because it was the best system that could be devised for their use, and they adopted it because it was advantageous to them, and as to that parts which they considered disadvantageous, they did not adopt it.

Mr. Kinnison: Not because the American Company desired it?

The Witness: No. I am glad you called attention to that, because my answer in that one sentence had reference to the primary idea and I failed to catch the significance of the subordinate clauses.

Q. You also testified on page 521 that the department make complete annual audits of the general books of the associated companies including the Ohio Bell Company. [fol. 9133] The auditing of these books performed regularly by the A. T. & T. Company and not by the associated companies?

A. That is correct, yes, sir.

Q. Does the A. T. & T. Company carry a duplicate set of books of all these companies?

A. Oh, no, no, it does not by any means. In fact, I do not know that that would be permissible under the Interstate Commerce Commission Act. I think only one set of books can be kept for a public utility subject to the Act.

Q. What is the associated company required to do from time to time and at what intervals of time in placing in the hands of the A. T. & T. Company financial reports and statements of the business of the associated company.

A. The associated companies with which I am familiar make monthly reports, an elaborate series of them, and they make anywhere from fifteen to thirty copies of their reports for the use of their executives and operating officials and of the A. T. & T. Company general staff, and they send several copies of those reports each month to New York.

Q. Now the purpose of that is to fully inform, as fully as possible, the A. T. and T. Company of the operations of the associated units concerning the receipts and disbursements of the companies, which enables the A. T. & T. Company to keep a thorough check on the operating business of these units?

A. That is correct, yes, sir.

Q. And that is done for the information and benefit of the A. T. & T. Company?

A. No, it is done for the benefit of the associated com- [fol. 9134] pany too. The A. T. & T. Company could not perform its functions with reference to the associated company without being fully informed as to the financial showing, and they must receive copies of the reports if they are to discharge their obligations to the associated companies.

Q. How can it be a benefit to the associated company to be required to prepare and furnish monthly those statements? That in itself would be no benefit to the associated company would it?

A. Oh, yes, it would be a decided advantage.

Q. Wouldn't the benefit of it all be to the A. T. & T. Company up to that point?

A. No, I don't think so at all, because the American Company repeating these reports and analyzing them, obtains a certain viewpoint——

Q. Now you are talking about something subsequent to what I am. I am talking about the preparation and the filing of those reports with the A. T. & T. Company. Up to that point, there is no direct benefit derived from it by the associated company, but the benefit up to that point is for the A. T. & T. Company, so it can do something subsequent on account of it? Now that is true, isn't it?

Mr. Burr: How can it be any benefit to the American Company until they are filed with them?

Mr. Dotson: Now, Mr. Burr, we are getting along all right, Mr. Crunden and I.

The Witness: Let's see what happened. When some of [fol. 9135] these reports are struck off and some of the copies go to New York, they are right at New York in the mail. Do you want to take it at that point, before the A. T. & T. Company has seen anything of these reports?

Q. I am taking it up to that point, its arrival in New York.

A. In the office of the company? And your question here, has the fact that some copies have been transmitted to New York and arrive there and no use has been made of them so far been of any advantage to the associated company? Is that the question?

Q. Yes, that is the question?

A. There is only one answer to that and the answer obviously is no.

Q. Well, I don't want to have it appear I am trying to be anything but fair. I want to be fair and probably one might get the impression the other way?

A. Not at all. I know that could not happen.

Q. The primary purpose of these reports is, of course, to furnish the information that they carry to the A. T. & T. Company; that is the first and primary purpose of the reports, to convey this information that they bear to the A. T. & T. Company, that it may proceed to discharge its duties to the associate companies.

A. The primary object of the reports is to furnish information to the local officials. There would be bound to be such reports, even if the A. T. & T. Company never existed. As to those copies that go to New York, of course the primary purpose there is that the A. T. & T. can analyze them and advise the associated company as to trends and as to their opinion of results in such a way that the associated [fol. 9136] company can get the benefits flowing from that.

Q. Now what kind or sort of books and records does the A. T. & T. Company keep with reference to the associate companies, the business of the associate companies?

A. It keeps none whatever.

Q. Does it have any records of the business of the associate companies beyond the financial reports, monthly financial reports?

A. No, sir, except such as are purely incidental, as for example, when toll studies are made, it reveals not merely the business handled over the A. T. & T. lines, but also the business handled partly over A. T. & T. line, which was also

handled on the lines of the associated companies, but I take that to be a mere incidental matter for the purpose of your question.

Q. You have spoken about preparing a uniform system of accounting, that is, by the A. T. & T. Company, for the associated companies. As a matter of fact, the only thing that the A. T. & T. Company has done in that respect has been to see that there has been installed and used by the associated companies the same uniform system of accounting as recommended by the Interstate Commerce Commission, and to have those associate companies conform to that system?

A. Well, I do not think that would fully state it.

Q. No?

A. If you want to state it very compendiously, I think you would state it this way: Prior to the adoption of the uniform system of accounts, the American Company perfected the best system it could for the use of the associated companies, [fol. 9137] but when the government intervened and began the study of a system which was to be mandatory, the American Company performed the necessary work with the government in behalf of the associated companies, and relieved those companies of the work which otherwise they would have had to do or let the thing go by default. After the system became effective, the American Company worked out those optional sub-accounts and detailed classifications, which were not made mandatory by the uniform system of accounts, and gave the associated company the best suggestions that it could on that; and from time to time it has answered the inquiries of the associated companies with reference to classifications and where necessary has taken those inquiries to the Interstate Commerce Commission and obtained definitive answers; and that work as I said before is still going on.

Q. Granting all that, yet the system of accounting that the associated companies employ is constantly that recommended by the Interstate Commerce Commission?

A. The main backbone of the accounts is fixed by law, yes, sir.

Q. Now, in a question asked by Mr. Burr which you answered, this was said: "Will you tell the Commission whether or not the services which you have been describing and are about to describe are services furnished by the General Staff of the American Telephone Company, par-

ticularly by the department which you are referring to", which evidently was your department, "From time to time [fol. 9138] for the benefit of the associated companies, including the Ohio Bell." Your answer was, "I understand; I will talk with reference to that work specifically and I shall have that work in mind in what I say." Now, having in mind your testimony as to the work performed, which you describe as performed by the A. T. & T. for the benefit of the associated companies, including the Ohio Bell, to what extent do you consider these services are also of benefit to the A. T. & T. Company?

A. Why, they are only of benefit to the A. T. & T. Company in this way, that efficiently performed they entitle the A. T. & T. Company to receive compensation for the services.

Q. The A. T. & T. Company owns the stock, the common stock, of the Ohio Bell Telephone Company; we understand that is true isn't it?

A. Yes, sir.

Q. Wouldn't it occur to you that as owner of that stock, which is the basic ownership of the property that there would also be reflected very strongly an interest, a proprietary interest as well, that would be conserved by these services?

A. No, that would not occur to me. For example, I am a stockholder in the Crane Company, but I do not perform any services for it.

Q. No, but in a case like this that we have before us of the Bell system, there exists this complete ownership of a property, such as the Ohio Bell property, and the A. T. & T., the owner of it through its stock holding, is rendering services to that company; wouldn't the proprietary interest occur to your mind as a very important interest as being [fol. 9139] served by that service.

Mr. Burr: I object to the question. It assumes something which is not true in point of fact and is controverted by the record, namely, that the Ohio Bell Company is owned by the American Company.

Mr. Kinnison: Mr. Burr is distinguishing between the outstanding preferred stock and the common stock.

Mr. Dotson: I understand. I make the decision and I am only referring in the question to the common stock holding.

Commission Poor: Well, there is the question as to the common stock.

Mr. Dotson: I am asking about his state of mind with reference to the benefits which are derived from these services.

Commissioner Poor: He may answer.

The Witness: No, that would not suggest any such result in my mind. It seems to me that the mere fact of ownership of the common stock of the corporation does not entail the necessity of rendering any services, and it seems to me particularly in a case like this that the services rendered should be paid for, and not rely upon philanthropy or anything like that to secure the services.

Q. I have not suggested that, Mr. Crunden. I have only suggested the fact that certain interests are being served by these services which are rendered. There is the operating interest and here is the proprietary interest coupled with it, [fol. 9140] which makes the operating interest possible. Wouldn't that benefit in your mind now the reflected fact to the proprietary interest that is vested in that property?

A. No.

Q. The fact, Mr. Crunden, that the owners of the common stock of the company, the Ohio Bell Company, should receive dividends from the profits and earnings of the company when such profits and earnings are available and are the ones that directly are benefited from the net earnings and profits of the company does not change your mind at all and your view of the question of benefits that result to the owners of the stock from the services that you claim are rendered by the A. T. & T. Company for the Bell Company?

A. No, my idea on the subject is simply this. Let us take a corporation in which I, as an individual might own a small amount of stock. If they would come to me——

Q. I do not want to interrupt, but the question is in point here, and I would like to have the answer in accordance with the question or else require another question directing your attention to another thing?

A. All right, strike out the remainder of the answer after "No". I want to give Mr. Dotson what he wants.

Mr. Burr: You have a right to explain your answer. The Commission ruled you have answered the question.

The Witness: I was simply going to say if I were the owner of a small amount of stock in the corporation and the officers of that corporation came to me and said, "Here, [fol. 9141] you can do us a little incidental service in the

corporation by going and seeing somebody or doing something," I would very likely do it. But if they came to me and said, "Here, we want you to do certain continuing work, certain work that is more than incidental," I would say, "I will see about that." And the first thing I would ask them would be how much they were going to pay me for that work.

Q. You do not consider that a parallel case to the one on hearing now?

A. I think that applies to any place, where one individual does work for a corporation.

Q. You think it applies in this case?

A. Yes, I do.

Mr. Kinnison: Would you be willing to sit on the board if you owned 90 per cent of the common stock?

The Witness: Sit on what?

Mr. Kinnison: Sit on the Board of Directors, and perform the services of a member of the Board, give your best judgment.

The Witness: If I was elected a Director of the corporation, the corporation to which I referred, and accepted, then I would do my duty as a director and I would be compensated as a director.

Mr. Kinnison: You do not distinguish between a small ownership and a 98 per cent ownership as regards the ordinary duties of the two parties.

The Witness: No, not if I understand your question correctly.

[fol. 9142] Mr. Kinnison: You said in answer to Mr. Dotson if you owned some stock, any small proportion of the stock of the corporation, you would perform gratuitously some services, but if they called upon you for steady duty, you would expect to be paid.

The Witness: Precisely.

Mr. Kinnison: On the other hand would your opinion be the same if you owned 90 per cent of the stock of that corporation instead of a small amount of it.

The Witness: Exactly the same. I would be fooling myself if I took any other position.

Mr. Kinnison: You do not think your responsibility would be any greater in one than in the other.

The Witness: No, not as a stockholder.

Q. Laying aside all arguments and views which have been expressed, you do recognize though, Mr. Crunden that such services as you have related here that are rendered by the A. T. & T. Company to the Ohio Bell Company, if rendered, do result in a benefit ultimately to the stockholders to the extent of any dividends which they may derive on their stock; isn't that true? That benefit can be traced back as one of the results of the services rendered?

A. That rather long sentence remains in my mind this way; that if the contract is beneficial to a corporation, it is beneficial to the stockholders who own the corporation. That is obvious.

Q. To the extent that they derive—At least to the extent that they derive a dividend return upon their stock. That [fol. 9143] is one benefit.

A. I don't think you can particularize about that. The proposition is that anything that is beneficial to the corporation is to the advantage of the owners of the corporation. That stands to reason.

Q. Now, you and I agree on that?

A. Yes.

Q. If that service results in maintaining a value to the property, that is a benefit to the owner is it not? If it maintains the value of the property and the use of the property to which it is devoted, it is a benefit to the owner isn't it?

A. Yes, I would say so.

Q. If it also enables that property in that use to provide an income or a return in the way of earnings and profits to the owner, the owner is benefited.

Mr. Burr: It is wholly a matter of argument. I do not see that we are getting anywhere with it.

Mr. Dotson: It should not be and it is not if we can find out how we look at those things.

Commissioner Poor: The mere fact that it may be beneficial to the stockholder does not make it any less beneficial to the company.

Mr. Dotson: Well, granting that is true, yet it is well to know what this witness regards as benefits flowing from these services, to the company.

Commissioner Poor: The fact that it may benefit somebody else other than the company does not in itself imply it is not beneficial to the company.

Mr. Dotson: That remains for discussion later on Your Honor, that I think will be helpful to the Commission.
[fol. 9144] Mr. Burr: You are trying to discuss it now through the medium of this witness, and that is my objection.

Mr. Dotson: No, I am trying to get at what this witness means by the things he said.

Q. Now, Mr. Burr, in a question here you said, "Now if it can be understood that all of these services to which you are testifying are rendered to the Ohio Bell Company among others, it will shorten the inquiry. With that understanding will you please proceed?" and you said, "Yes." You then testified as to what you considered and claimed to be the services rendered by the A. T. & T. Company. Now did you mean while you were testifying that the Commission and the parties interested in this hearing were to understand that all the matters mentioned by you in your testimony were received by the Ohio Bell Company, and that the Ohio Bell Company was thereby benefited?

A. In principle, yes, that is, I might have illustrated by means of some details that would be more specifically to some other company than the Ohio Bell, because I am not familiar with the Ohio Bell. But in either one my answer is, yes.

Q. Now, you are making that statement not upon the basis of the fact of whether the services that you described your department rendered were received and used by the Ohio Bell Company or not?

A. I fail to get the sense. Will you read it?

(Question read.)

Mr. Dotson: Just strike it out.
[fol. 9145] The Witness: Would you mind putting it some other way.

Q. Your statement is made without regard to the fact that probably many of the services described were not received and used by the Ohio Bell Telephone Company?

A. No, I think that all of the services that I testified to in a general way are received by the Ohio Bell Company. But I merely meant this, that I do not remember exactly what I testified, and I may have used some illustration of a service rendered that might not in the form in which I made it, apply to the Ohio Bell. It might apply in a general-

ized way, but not in a specific way, because I did not confer with the Ohio Bell Company before I came out here. So that, disregarding that minor proposition, the answer is yes.

Q. You do not mean to say to the Commission that you are able to testify from personal knowledge as to what portion of these services were received and used by the Ohio Bell Telephone Company?

A. In a general way I am, yes, sir.

Q. Now, in what way? When you say, "A general way" just what do you mean? In what general way have you personal knowledge? I am speaking about personal knowledge.

A. Of course I have personal knowledge of the affairs of my own sub-department, and I send men to Ohio to perform work for the Ohio Bell Company, assisting them in the installation of routines and in various other work. And I answer correspondence and my subordinates answer corre-
[fol. 9146] spondence from the Ohio Bell Company.

Q. But that does not cover all of the services rendered by your department does it?

A. You mean the whole of the comptroller's department?

Q. That renders these services that you have described, I mean.

A. No, I am using that as an illustration.

Q. That is as far then as you can state that your personal knowledge goes with reference to these matters?

A. My personal knowledge goes rather intimately to my own particular section of the comptroller's department, and it extends generally to all of the work done in that Department, because I am more or less closely in touch with all of the sections.

Q. Now turning to another subject, with reference to Exhibit Number 6, Crunden Exhibit Number 6——

A. What is the name of it?

Q. "Standard estimate routine of the Bell Telephone System." On page 20, paragraph 12, it reads, "Interest during construction on account of construction work in progress, estimates should be determined monthly by applying the authorized rate to the balance account, 104, as shown on each estimate ledger sheet or open specific estimates, after the current month's transfer to fixed capital account has been made, and the amount so obtained should be posted to the column headed, 'Interest during construction, monthly

charges.'" Are those authoritative accounting instructions actually in effect among the associated companies?

A. Yes, sir.

[fol. 9147] Q. Now the amount that is so posted and charged may or may not correspond to interest actually paid by the treasurer of the company to a lender of the money to the company on account of particular dollars paid out on account of the specific estimates involved, does it?

A. It may or may not.

Q. In what way may it not?

A. In almost all cases, you would not borrow money for use on a particular specific estimate. You would have capital which you were proposing to invest in a property, and this entry to which you have just referred is simply book recognition of the principle that interest during construction is an item properly to be capitalized. But we make no attempt to capitalize in any one year the exact sum that we might capitalize in that year if we made an attempt to capitalize the very last item of property that was subject to interest. We simply place that amount on the books in recognition of the general principle that interest is an item properly to be capitalized during construction, and we capitalize interest only on specific estimates.

Q. This interest is charged to the construction account monthly is it not?

A. Yes, sir.

Q. And without regard to the source of the funds that are used for construction?

A. That is correct. We obtain money—That is, the Ohio Bell Telephone Company obtains money on advances; it might obtain money on bonds. However the money were gotten, you would make this particular entry in the same way.

[fol. 9148] Q. In the construction work, it is a fact, that you use the funds in the depreciation account to the extent that you have funds there available for that purpose; that is true, isn't it?

A. We have no funds in the depreciation account.

Q. Well, you have a depreciation account haven't you?

A. Yes, sir, we have a liability account as I explained on my direct examination, known as the reserve for accrued depreciation. That is a book account, but there is no fund associated with it.

Q. In making up your financial statements of revenues

and expenses, you show in those statements, which reflect the records of the books of account which are kept, a depreciation charge, do you not?

A. In the operating expenses, yes, sir.

Q. And that depreciation charge represents an amount that is taken from current revenues to cover the amount that is placed in that fund?

A. No amount is placed in any fund.

Q. Well, I mean this, to be particular; the company say has a revenue of $500,000.00 total revenue for the year. Now at the end of the year the disbursements for maintenance are so much, for traffic so much, commercial so much, interest a certain amount, taxes a certain amount, depreciation a certain amount, rents a certain amount, and any other expense that goes in. The various funds thus created are created from the revenues aren't they, from which are made the items carried into the expense account?

[fol. 9149] A. As I understand it, you mean that the charges to the depreciation expense operate to retain in the undertaking amounts equivalent to the charges, so that they cannot be disbursed in dividends or otherwise pass out of the business.

Q. Yes?

A. I agree with that.

Mr. Kinnison: What is your answer?

(Answer read.)

Q. You mean when you say there is no money in the depreciation account simply that the company uses available funds derived from the incomes of the company for all of the operation needs, including construction of additions and extensions and betterments, as well as cost of maintenance and so forth, so that at the end of the year, there is actually no money in existence that can be parceled out to those funds?

A. Exactly.

Q. Nevertheless, there was just as much of a depreciation fund derived from those funds as there was a maintenance fund in the history of the operations of the company?

A. The idea of a fund seems to be that there is inevitably associated with the depreciation reserve charge an amount of cash or other assets which constitute a segregated fund. No such thing takes place. In fact, it is perfectly conceiv-

able that the depreciation charges might be made in the absence of any revenue to offset them.

Q. You treat your depreciation fund just the same as you treat your maintenance and your traffic fund do you not in operating and conducting the business of the company, [fol. 9150] that is, you have incomes from certain sources; they come in and you use them for all of these various purposes, as you go along. Now we do know and you recognize if you do actually pass any money over into the depreciation fund so-called and say, "This money belongs to the depreciation fund," that that money would be available for improvements, extensions and betterments of the property of the company, wouldn't it?

A. In that event, yes, sir.

Q. Now without going through that formality, however, you have made up your maintenance cost at the end of the year from the amount of money that you spent for maintenance; that is true isn't it, that your records are so kept?

A. You mean for current maintenance?

Q. Yes?

A. Yes.

Q. You also carry in it as the total of traffic cost the amount of money that during the year was spent in running that department; you get that; now the same with the commercial and so forth, the others that I mentioned. Now as to doing all of that you still would have a certain amount of revenues left, and you give the depreciation fund credit for some of those funds, and thereby, so far as the bookkeeping is concerned, you have absorbed such portion of the revenues as you charge to the depreciation reserve, haven't you, just the same as you will absorb in the maintenance cost a certain portion of the funds, of the revenue?

A. You say credit depreciation fund with this amount.

Q. Yes, I said charge, but I meant credit?

[fol. 9151] A. No. I think you were all right. You said credit the depreciation fund with the amount for depreciation for the year and charge that to depreciation expense.

Q. If you have used it——

A. You are using the term, "Reserve fund" there to cover what I call the reserve for accrued depreciation.

Q. If I am confused——

A. I think that is where the confusion comes in. That is, the credit entry is made to a liability account called the reserve for accrued depreciation, and it represents a book-

keeping balance that is a credit, and there is no money associated with it all all, any more than there is with any liability. Offsetting all of the liabilities in general are all of the assets in general, and that is the only statement you can make about a set of books like that that is true.

Q. I mean the depreciation fund, whether it is accrued depreciation or whether it is realized depreciation?

A. When you refer to the depreciation fund you want me to understand what is shown in the accounting system as reserve for accrued depreciation?

Q. Yes?

A. We are together on that. That is all right. I wanted to be sure that there was no confusion between us, because a fund—The word "fund" is used by accountants in a different sense.

Q. When I say fund, I mean the item known as depreciation?

A. Reserve?

Q. Yes. Whatever amount is carried by the bookkeeper into the depreciation account of his bookkeeping, the com- [fol. 9152] pany treats that as available for capital investment?

A. Well, the bookkeeper does not touch the assets of the company. He simply makes an entry that charges the expense and credits the depreciation reserve. Now whatever cash there is in the business is not changed by reason of that entry. The executives can take whatever working capital they have from the revenue or any other source, and they can direct the investment of it in plant or elsewhere, whatever they want to do, but that does not affect the question of depreciation account from the standpoint of the accountant.

Q. But the time does come in your operations that you have built certain extensions to the system which require additional capital. Now that additional capital must come from certain sources. It may come from the sale of stock; it may come from the borrowing of money; it may come from a surplus that you may acquire; it may come from depreciation account that is kept. Now, when you have no available cash capital from the sale of stock and none from the borrowing of money and none from surplus, and you take it from the depreciation account, the time comes when the capital account will have to be charged with the

amount of the extensions that are made from the funds taken from the depreciation account; isn't that true?

A. It is not true, in this way. This is where we are not describing it in the same way, that is, it is not taken from the depreciation account. It is taken from the company moneys. Now that money, along with all other assets in [fol. 9153] general, is offset on the books of the company by all the liabilities in general. But you cannot pick out certain dollars and say, "These monies or this plant is offset by reserve", any more than it is offset by capital stock.

Q. I understand, but in your bookkeeping system you do keep an account of these funds under those heads and under those items. Now those funds are used. Primarily we understand the depreciation account is to replace retired or worn out property?

A. Not to replace property.

Q. To restore capital account?

A. That is right.

Q. Yes, capital investment. But in the meantime, until it is charged off of your books in that way, the fund is there, available for any purpose of the company, and is used as I say, for working capital from time to time as a matter of fact.

A. If I can state it my way, monies which have been retained in the business for reasonable depreciation, may be used for capital additions and betterments or any other proper corporate purpose.

Q. Well, now, I am speaking about capital investment?

A. Except of course, to pay dividends.

Q. You cannot use it for that? You recognize it can be used for capital investment?

A. Yes, sir.

Q. And it is used by the company as a matter of fact; that is what I am getting at?

A. Oh, yes.

Q. Well, now, when it is used for capital investment in the construction of additions and extensions to the plant, where it necessitates carrying a construction account, the company carries this interest charge against the use of [fol. 9154] those funds just the same as if the money had been borrowed or the same as if it had been secured from the sale of stock?

A. There is no identification of dollars, so that whatever

practice obtains with reference to interest during construction applies in general. You understand of course, that the entries we make with reference to interest during construction do not apply to all of the plant which is added to our fixed capital accounts, but only to a certain amount of such stock, which is capitalized and which remains more than one month in construction progress.

Q. When that is done the company as a matter of fact is then deriving an additional benefit from the depreciation funds in the way of increased capital account upon which stock may be issued to the stockholders by way of an increased value of capital represented by the stock; isn't that true?

A. You draw that inference from the fact that entries are made covering interest during construction, Mr. Dotson.

Q. Yes?

A. No, that is not true, because what is done with reference to interest during construction is this. The ordinary method that was contemplated years ago of capitalizing interest during construction was to set apart the funds that were needed for construction in a bank where they would draw interest or something like that at three per cent, and to capitalize the difference between such interest as you could get in that way, and the amount you paid for the money, what you might call the loss on the money. [fol. 9155] That is all right with reference to large projects that occur only once in a while, as when you are building an extension or where you have additions to property going along continuously, and where you do not have these proceeds of large bond issues to draw upon it is much better as a practical matter, and it is also better from an accounting standpoint; if you make an entry where you charge plant with such interest as you propose to capitalize and credit interest revenue, that does not change the essential nature of the transaction. The essential nature of the transaction is this, that your interest during construction account shows so much debit for interest, and this item for interest during construction is a credit and a partial offset to that debit, and the result is just as if you had set out the interest account net as you would have done in the old days. I cannot see that that has anything to do with the amount of capital stock you might issue.

Q. Granting that the method is pursued that you have described, the benefit derived, however, is solely the benefit of the company, not the users or the persons who furnished the depreciation funds; it would be only the company that would benefit by that interest accrual on deposits, which give them that much more to do business on?

A. Yes, but your point was it would enable you to increase capital stock.

Q. Yes?

A. I fail to see how capital stock would be increased otherwise than the issuance of stock at par.

[fol. 9156] Q. If you capitalized the entire construction account, which you do finally, don't you?

A. We put it on the asset side of the balance sheet.

Q. When the work is completed, it is a capital account?

A. Yes, that is added to the fixed assets.

Q. Whatever went in is capitalized? If interest went in, it is capitalized along with the other items of expense?

A. Yes, but that is a different thing from saying you should increase capital stock by——

Q. Does that increase the capital investment?

A. It increases the fixed capital account in the assets, but it does not have anything to do with the capital stock outstanding.

Q. It may not and it may; if it has increased the capital investment there may be stock issued against it may there not, as a matter of financing?

A. No, I don't see how that could happen.

Q. Well, it is capital account anyway and it represents the investment of the company?

A. Yes.

Mr. Kinnison: Does it increase your physical properties for the sake of rate making?

The Witness: Which? The inteerst during construction?

Mr. Kinnison: No, pardon me. The money which the company is in a position to put into additions and betterments from its depreciation reserve; it is used as a basis for earning is it not? Used in the business of the company.

The Witness: The company seeks to earn upon the fair [fol. 9157] value of its property.

Mr. Kinnison: And by reason of your depreciation reserve you have available from your gross revenue money

which you are able to put into the plant account, that is, you expand and develop physically; doesn't physical property come into the appraisal when you seek to use it as a rate base?

The Witness: Yes, certainly.

Mr. Kinnison: And you earn upon it.

The Witness: Yes, but we earn upon the fair value of that. That is a distinct quarter section from what Mr. Dotson and I have been talking about.

By Mr. Dotson:

Q. Yes, but that is an element that enters into the value of the property does it not, the element that Mr. Kinnison spoke of?

A. How is that element described, so that we may know what it is?

Q. It enters into the consideration in determining the value of the property upon which the rate shall be based.

A. Now to bring the question and answer together, that is what I understand, that the company had certain property against which for example, we will say, it has issued capital stock. Now it does business, it performs certain services, it receives certain revenues for those services. Against those revenues it makes charges with respect to accrued depreciation. Certain moneys are retained in the business of those depreciation charges. They are part of the moneys the company receives rendering service and are therefor- the company's money, and the company may at [fol. 9158] this election extend those monies for additional property. If it does, it places those additions and betterments at the same rates that it did the original property. Both depreciates. And if it comes to a rate case proposition, it is entitled to ask for a return on the fair value of that property as a whole, and only upon the fair value.

Q. That is what it does, that is true; but the amount of money invested, the amount of money invested in plant extensions and plant growth from the depreciation reserve —And I use that word in order to know what part of the incomes we are including in our question, it is as a matter of fact, added to the value of the property upon which a rate of return on all service is asked?

A. Over and above what the amount would have been had it made no depreciation charges? Is that the idea?

Q. No, the idea is just what I mentioned, that when you build plant extensions, you necessarily increase the value of the property—Assume you do—upon which you are entitled to a return. Now, for instance, you have got a property worth $10,000,000.00, and you increase the property to fifteen million; then you would claim your rate base was fifteen instead of ten, and it might materially affect the amount of the rate that you would ask for. Now, if that additional five million is from funds which were derived from the service that you have already rendered, then you have increased your capital investment, not your capital invested by the owners of the property, but by the users of [fol. 9159] the property; isn't that true, that you have taken it from the depreciation account?

A. The investment is one thing. Now a minute ago, we were talking about what property we would have in a rate case. Now, we do not want it confused about what is on the books by way of investment and what there is for a rate case. If all you mean by your question is this, that here is certain property on the books before any depreciation charges are made, that as a result of depreciation charges there is additional working capital owned by the company appearing among its assets, which it can use for additions and betterments, without the necessity temporarily of floating additional capital stock, the answer, of course, is yes. That is obvious.

Mr. Kinnison: May I ask a question, Mr. Dotson?

Mr. Dotson: Yes.

Mr. Kinnison: I think in your cross-examination, which was in part on your direct, by interruption, you took as a typical example a thousand dollar automobile; you gave it a life of four years; you set aside to your depreciation reserve $250.00 a year using it as an analogy to show that at the end of four years, you would have a thousand dollars for your automobile; do you remember that?

The Witness: Yes.

Mr. Kinnison: Take that yearly $250.00 which you set aside and re-invest it in your business and earn $25.00 a year each year, at the end of four years, you would have your thousand dollars plus a hundred dollars, wouldn't you?

The Witness: Yes.

[fol. 9160] Mr. Kinnison: Then you would have more than was necessary to replace the machine.

The Witness: If you earned at that rate.

Mr. Kinnison: Under the statement you have just given haven't you by your re-investment of monies withheld by the company into your capital account earned upon it and at the end of the period which you have fixed for the retirement of a piece of property or the end of its life, don't you have in your possession more than enough money to take care of it.

The Witness: No.

Mr. Kinnison: Why?

The Witness: Because the system of accounts——

Mr. Kinnison: Pardon me.

The Witness: Under which we are working and which are made effective by the Interstate Commerce Commission, requires we shall make the charges according to straight line procedure, and it makes no reference to interest, and it would produce erroneous results if the interest item were included in it.

Mr. Kinnison: If you will aid me by forgetting that theory—The account system is just as foreign to my knowledge as it can be—Actually if you set it up and earn in terms of dollars and cents, actually there should be more there than the thousand dollars at the end of the four years?

The Witness: Why should you do that?

Mr. Kinnison: Just answer my question, please. You [fol. 9161] have stated that you earn on it, and if you are permitted to re-invest it in your business, you earn on it; you can use it for a new rate base; at the end of four years, assuming you have earned on it, you will have more that four $250.00; you will have four $250.00 plus the earning.

The Witness: That will depend on what you earned on the original automobile.

Mr. Kinnison: Surely, but actually at the end of the four years, you would have more than the thousand dollars?

The Witness: Not necessarily.

Mr. Kinnison: Why not?

The Witness: Because this thousand dollars is something you are providing to cover the retirement of the automobile. If you provide that, that is all you need. That is a transaction in itself. Now, if your earnings be greater or less at the end of the fourth year than they were in the

first year, that is a proposition that will speak for itself. Those revenues will speak for themselves, whatever they are, and should be so considered, whatever the revenue is. You can't change that.

Mr. Kinnison: That would affect the physical depreciation of the property?

The Witness: No, it has nothing to do with the physical depreciation of the property except it is the consumption of the property in operation that makes necessary the charge to operation.

[fol. 9162] Mr. Kinnison: As an accounting proposition you say you do not have the actual funds represented by your depreciation reserve in terms of dollars set aside. Assume we do take that procedure. At the end of the first year we set aside $250.00 without interest, the same at the end of the second, third and fourth; at the end of the fourth year, we would have a thousand dollars?

A. Yes, sir.

Mr. Kinnison: Say, however, I put it out at interest or say I invest it and earn on it, there would be an actual difference wouldn't there?

The Witness: Yes, you would be likening it roughly to what would be equivalent to a sinking fund provision.

Mr. Kinnison: You do receive some benefit then by reason of your right to re-invest in the business; that is, your money is not idle; it is available to you as working capital would be, but not available for dividend purposes?

The Witness: Oh, yes, certainly. We should be very foolish if we allowed that money to lie idle, and the upshot would be an inevitable loss.

Mr. Kinnison: If you actually handled the dollars at the end of four years you would have more than is necessary to buy that new automobile you speak of.

The Witness: No, that is where the misunderstanding comes in. You are starting out on the theory that you are going to provide a thousand dollars to retire an automobile plus certain earnings, which we will say for sake of [fol. 9163] argument is a hundred dollars. Now you are going to provide that automobile eleven hundred dollars according to your layout.

Mr. Kinnison: No, I did not want to do that. I was simply taking your analogy of a thousand dollar automobile with a life of four years, straight line depreciation on it,

setting aside $250.00 a year. I was not contemplating any earning. I was simply contemplating having the new automobile at the end of four years. Wouldn't I have that much more if I set aside the $250.00 and put it out at interest?

The Witness: That will depend on whether you have been able to earn the return necessary to keep your capital whole, the return considered on the original automobile.

Mr. Kinnison: That would be taken into consideration on the original property.

The Witness: You cannot divorce this from the original property which the depreciation is designed to protect.

Mr. Kinnison: You would say you would have nothing more than necessary to take care of the depreciation on the thousand dollar automobile?

The Witness: Yes.

Mr. Kinnison: That is all.

By Mr. Dotson:

Q. Mr. Crunden, you just used an expression that you also used on page 594 of your testimony in chief, concerning your interest calculations, which you said would pro- [fol. 9164] duce an erroneous result. That related to an interest calculation on the depreciation account.

What did you mean by, "Erroneous result"?

A. I mean by that, this, that the bookkeeping is carried out according to the method of the Interstate Commerce Commission, and that is the straight line method. That makes no reference to interest charges and requires none. It is a simple procedure of spreading the cost of capital used up in operations in equal installments over the service life of the property consumed.

Q. Briefly, when you say an erroneous result, you mean it would produce a result contrary to that which the straight line would produce?

A. Yes, and an erroneous result as far as the prescribed accounting is concerned.

Q. Well, if I understand your answer that is just the same thing I mean?

A. It is something more than what you said.

Q. It is contrary to the method adopted by the Interstate Commerce Commission and of course to that extent it would produce a different result, and therefor it would be errone-

ous, because it is contrary to that method and contrary to the result which that method produces?

A. Yes, and it is to be condemned because it produces an erroneous result and not because it produces a different result.

Q. But you do not mean that interest could be—That is, an accountant could properly compute interest return upon that depreciation account, which to that extent would in-
[fol. 9165] crease the depreciaton account and thereby augment it more rapidly than the straight line method would?

A. What would be the object of augmenting it more rapidly. If you augmented it more rapidly——

Q. That could be done could it not?

A. It could not be done under the prescribed system of accounts.

Q. Not under the straight method, but it could be done under any other method?

A. I would not like to undertake the task of doing it, because it would be exceedingly difficult to get it accurate.

Q. Isn't there a method that does contemplate interest return upon these funds?

A. No method that is in general use.

Q. I don't mean in general use. But I say there is a known method by which that is done?

A. There is a known method by which it is presumed it may be done as a mathematical possibility, but it does not work out in practice.

Q. Is that a feature of the percentage method? Isn't there a method called the percentage method?

A. The diminishing percentage method?

Q. Yes, the diminishing percentage method I should say?

A. I have heard of such a method. I never knew anybody that used it, and it is not equitable for use by public service corporations.

Mr. Kinnison: It is not what? Equitable, you say?

The Witness: It is not equitable.

[fol. 9166] Q. It is a method that is known and it is a workable method as well, but probably not a convenient one; isn't that true?

A. Any method would be workable. You could chop the amounts which in the aggregate make up the consumable capital outlay into any size portions you want and shove

them in in any old fashion, and the thing would be workable in that sense.

Q. Now there is a sinking fund method that contemplates interest, too, doesn't it?

A. Yes, sir.

Q. Is that used?

A. No, sir. It is used in a few cases by street car companies I believe where it is required by the provisions of some contract, and in some cases those contracts were made years ago before all of the features of the sinking fund method were properly understood. I don't think there is any telephone company in the country that uses or could use the sinking fund method.

Q. Your sinking fund method is objected to, I assume, because it is rather a complicated method and not simple like the straight line method?

A. The primary objection to it is it is not a lawful method.

Mr. Kinnison: What do you mean by that?

The Witness: Our position on that is explained in our brief which we placed before the Interstate Commerce Commission at this hearing on depreciation this year.

Mr. Kinnison: You mean to say that the A. T. & T. claims it is not lawful.

The Witness: It is not a lawful method.

[fol. 9167] Mr. Kinnison: You mean that is your contention?

The Witness: Yes.

Mr. Kinnison: I see.

The Witness: We do not see how it can possibly be made to work. Of course on top of that, there are insuperable practical difficulties.

By Mr. Dotson:

Q. Then there is the compound interest method?

A. The compound interest method I presume is what I would designate the annuity method.

Q. Yes?

A. I would not call that a method. I would call that a theory. It is worse than useless.

Q. It has been used, as it not?

A. I do not believe it has even been used in practice. It might have been ventilated in the brains of some mathematicians where everything down to the end of time is given eternal space, but it could not be applied in practice by fallible humans.

Q. At least, it is a method that is discussed in all standard authorities on depreciation accounts is it not?

A. I would not say in all. It is adverted to in some. And it is discussed and condemned by the Interstate Commerce Commission depreciation section in its report.

Q. Yes, we understand the stand of the Interstate Commerce Commission, because it is defending its own straight line method. Now what is the unit cost or rational method? Is that different from any of these others you have mentioned?

A. The unit cost or rational method?

Q. Yes?

A. That is a new one.

Q. There is such a method is there not?

[fol. 9168] A. I never heard of it, Mr. Dotson.

Q. Then you would not be able to discuss it or define it?

A. No, sir, I don't want to meet any more methods than I am acquainted with already.

Q. I guess I will have to tell you about it. I won't now though. Now on Page 586 of your testimony you discuss the depreciation account, and in that connection I wish to ask, should the original cost of a piece of apparatus as reflected on the books of account include any items of cost other than that covered by the actual original expenditure required to put the piece of apparatus in position and in service?

A. You mean should the charge to expense include anything other than the book cost of that item?

Mr. Dotson: I think maybe we better have the question read.

(Question read.)

The Witness: Not unless additions are made to the structure at a later time before its displacement, that is, it might be a property that grows as it lives.

Q. I do not know that I full- catch the significance of that statement?

A. It might be a useless interjection as far as your pur-

pose is concerned. Here is a switchboard that is placed on the books at ten thousand dollars originally. Now the object of the bookkeeper is to charge off that ten thousand dollars in equal installments during the life of that switchboard. But additions will be made to that switchboard during its life, and as those additions are made additional [fol. 9169] amounts arise which must be written off in a similar manner. But the book will always be on the basis of cost; if that is the general trend of your question, the answer is yes.

Q. Only that part which it cost to put it in service?

A. Yes.

Q. Now, how do you determine the service life of a property or a class of property?

A. You mean how does the company determine the service life?

Q. Yes?

A. According to the Interstate Commerce Commission accounting system the duty of doing that is placed upon some responsible officer, who must be ready to support his conclusion if necessary under oath. That officer in most of the Bell Companies is the chief engineer, although not always, I think. It is an engineering question.

Q. Is that determined by the physical life of the property?

A. You say is that determined. Is what?

Q. Is the service life of the property determined by the physical life, in other words, the physical existence and usefulness of the property?

A. I better explain that by means of some illustrations I think, because if I answer yes, as I would like to, I think I will convey a false impression, owing to the complexity of the subject. This is the way the thing works out. One item of plant may be placed in service and remain in situ until the end of its physical life, when it must be junked. In that case the service life is based on the life in that [fol. 9170] location which is the only location, and therefore that is what I call life from the cradle to the grave.

Another piece of property may be placed in one location, and then for one reason or another be taken out of service before the end of its useful life, and it may be placed in place and remain there for a more or less indefinite period. At some subsequent date it is replaced in service and re-

mains in that second location down to the end of its physical life, when it must be junked.

Now in the case of the second item, we base our calculations with respect to the depreciation rate on the lives in one place, and we necessarily have to do that under those conditions, because of the interim when that is carried in supplies and when no depreciation should accrue upon it. Therefore our general practice is to calculate the depreciation rate upon the life in one place, and that carries with it the calculation of the service life in one place. But due to the fact that the item, when taken out of service at the first location, has a considerable second hand value, the reserve which has been credited in respect to that item is not extinguished, but passes over into the second life, and it is only extinguished at the end of the life in the second place.

Q. If a property that is removed from one location to another, as you have described, is taken out, or placed in the supply account, and then put back into service at 100 per cent., at the cost of that property as of that date, which may be at a higher cost than originally when it was first [fol. 9171] put into service in the first place, in the first location, is the service in the second location based upon the consideration that it is received and placed there as new in the same way that it was placed in the first location?

A. Yes, sir, that is, as to these minor items of material, with which we are mainly concerned in the day to day operation of the plant, such as station apparatus and parts of private branch exchange switchboards and other property, which cannot be individualized while it is in the repair shop. The principal part of the plant of a telephone company which is re-usable is station apparatus, and there is comparatively a very small amount of material other than station apparatus which can be re-used in the manner that I have described.

Q. Doesn't the effect of wear and tear upon the property in the first location tend to shorten the life in the second location, the physical life?

A. As to the classes of property which we ordinarily re-use to any great extent, I would say no, as a broad answer. There may be exceptions to that. But the problem we have is primarily a question of station apparatus and the station apparatus is renovated in the repair shop in such a way as to be indistinguishable from new.

Q. You take poles, for instance, cross-arms and aerial equipment. That equipment is subject to the effect of the elements, exposures, and there is wear and tear deterioration which comes from those forces as well as the use of it; wouldn't the physical life of such equipment be materially [fol. 9172] reduced in time when it is placed into the second location and considered new? In other words, the life in the second location of such equipment could not be as long, I mean, as if it was actually new? Now what effect would that have upon your service life generally of property where you determine the service life by locations?

A. It would not have any effect on the service life or on the depreciation rate.

Q. No, it would not have an effect on the depreciation rate, I understand that, but upon the service life?

A. You mean the service life in one location or the total service life.

Q. What I am getting at is this, that a pole, for instance, has been in service in one location for years and then it is removed, it serves in another location a short time. It is removed and placed in a third location and serves a period of time. Now there has been three service lives that that pole has had if I am right?

A. Service lives in one location.

Q. In one location?

A. Yes, sir.

Q. Now what effect does that have upon the composite service life of the class of property computed that way as against the service life of a certain class of property which never is removed from place to place, but remains stationery in one place until the physical life is terminated?

A. Speaking broadly, it has no effect. Of course, the service life in one location is less than the total life. You can base your calculations either way, providing you have [fol. 9173] the necessary data. The depreciation data will be the same, whether you figure it on life in one place or whether you figure it from cradle to the grave.

Q. I am not talking about depreciation, I am talking about service life?

A. The service life in one location is manifestly less than from the cradle to the grave. That is obvious.

Q. If you base your rate upon that shortened life that occurs, doesn't that affect the rate?

A. No, sir.

Q. Materially?

A. No, it does not.

Q. Now, if your composite service life we will say due to these changes, is ten years, whereas, if not subject to changes, but remained in the same location, would be 20 years, and it would cost the same as all periods of that time, what effect would it have on the rate?

A. Well, now, that requires a complex answer, because it can be answered with reference to the material constituent or with reference to the total cost including the cost of installation. Let us eliminate the cost of installation and the intermediate removal data, and assume it is only the life in the two places; otherwise, it is too complex to follow, I am afraid. Take a pole. It is used in the first location for five years and is taken out and priced as a new pole, and is re-used elsewhere. It has another life of five years in another place and is then junked. If you make that calculation, assuming the original cost, is ten dollars, the amount that has to be written off at the end of the [fol. 9174] total physical life is ten dollars in any case, and the intermediate wash transaction, whereby it is taken out of one location and put in another, has no bearing. It would have a bearing if you did anything so ridiculous as to take the total original cost of the pole and assume that had to be written off over the first life in one place. Then you would get the entire life of the pole crowded into the first life, and you wouldn't have anything to write off in the second place, which would be against the uniform system of accounts. But if you handle the proposition correctly, it hasn't any effect on the rate. You simply increase the salvage in such a way as to offset the additional entry of the plant displaced, that is, if the pole is used and taken out of service at two locations, you have two entries for the plant replaced.

Mr. Shuler: Could that be explained by an example? Now for instance, the pole sets in one place for ten years. Of course, its service life is ten years.

Mr. Burr: Is it used up at the end of ten years?

Mr. Shuler: Yes, I mean cradle to grave in one place, ten years. Now take five poles, and for the purpose of this example, if it can be done, I should like to have it assumed that each one of those five poles, if remaining in one place, will live the same period. Now put each of those five poles,

each of them, in the different service lives, and what would the answer be as to the service life of them? In other words, I want to try to understand this method of determining service life in one situation as a method of determining [fol. 9175] service life. I admit I have not been able yet to do so. I suppose it washes out through the salvage phase of it.

Mr. Burr: That is it.

Mr. Shuler: That is one way I could imagine it; that is the only way I could imagine it.

The Witness: Here is one taken at random, and I don't know whether I have got it figured right, and I will ask your indulgence if I have not; but let us take a station which is worth ten dollars. Will you put down ten dollars, Mr. Shuler, and follow this illustration? Here is ten dollars, which is the original cost of the station. Now it is taken out of service at the end of the first life, and it is as good as new. So we put down ten dollars salvage opposite it. It is re-used in the second location at ten dollars and comes out again, in order to get a very exaggerated illustration, and is still worth ten dollars. You put down ten dollars salvage again.

Mr. Burr: That is, it *does* out as good as new.

The Witness: Yes. Now we put it in a third location as ten dollars and it comes out up there and you get ten cents junk. That may not be illustrative, but I am taking hypothetical figures. Now add up the total cost of plant displaced at your left hand, Mr. Shuler, it is $30.00; add up the total salvage and there is $20.10. Now, we will say that the total life in allocations is $10.00.

Mr. Burr: Ten years you mean.

[fol. 9176] The Witness: Yes, which is three and one-third years in each location. All right. We subtract the salvage, $20.10 from the original cost of $30.00, which gives you $9.90, cost of property, consumed in ten years, equal to 99 cents per year.

Now we take another station that is not re-used. You put the ten dollar station into this location where no re-use will be necessary, and you leave it there until it has to be junked, and that is ten cents salvage. Deduct ten cents salvage from that cost and you get $9.90. Divide that by the same ten years life and it gives you 99 cents per annum.

Mr. Shuler: You take and find out its service life by

finding out what it cost you to use during its cradle to the grave existence?

The Witness: Yes, that is right.

Mr. Shuler: Instead of computing the number of years it has served, you trace it from cradle to the grave and find out that that period took ten years and gives you all but its salvage, which was ten cents, and that makes it cost you $9.90.

The Witness: Yes, sir, that is right.

Mr. Shuler: Therefore, having cost you $9.90 during that ten years, the depreciation is 99 cents a year.

The Witness: Yes. In other words, Mr. Shuler, this proposition of treating the life in one place is merely an accounting expedient, and it reaches the same result. It [fol. 9177] is done because it is preferable from an accounting and mathematical standpoint. It is easier because in many cases you cannot trace the individuality of the items used. I could place a new and re-used set on this desk and very few people in the room could tell by inspection which is the new one, and it would not be new at that, because when the items go into the repair shop, new parts are substituted for the old ones. It is partly new and partly used.

Mr. Shuler: Take the same example and change the salvage values and see where we will come out.

The Witness: Change the salvage values? You take the examples.

Mr. Shuler: Say the second location; you say it is not as good as new; it is depreciated somewhat; would you then change its salvage value at that place?

The Witness: Even though we knew it——

Mr. Shuler: Yes.

The Witness: No.

Mr. Shuler: As long as it is used you consider its salvage value its original cost.

The Witness: Yes, sir, as long as it is fit to use again.

Mr. Shuler: As long as it is 100 per cent for service, for your bookkeeping and purposes of discovering its service life, it is ten dollars.

The Witness: Yes, there is no requirement in the uniform system of accounts that we should perpetuate those [fol. 9178] original values. The requirement of the Interstate Commerce Commission is that we put on the second hand value to us; but if it is fit for use and is in good

condition, we assume a second hand value equal to new, because it is for the time equal to new. If we were to allow the storekeepers to price these various items that come back into the store room more or less depreciated at prices which they might consider fair and which would be different from the next storekeeper, who would have slightly different ideas, it would place the accounting in the hands of the storekeepers and not in the hands of the general auditor. If we have the original cost of the item in the Western Electric price list or a supplier's price list, anybody can go there and see what it ought to be priced at. But if you put your accounting in the storekeeper's hands, you are going to get mixed up. If that had to be done, we would have to spend more money to see that the storekeeper did not get tangled upon on it. I like to see the accounts right, and I would put in routines which would require the segregation of secondhand price lists and everything necessary to keep that straight. We are taking one horn of the dilemma and ten years of experience proves to me we have taken the right one.

Mr. Shuler: Now, do I understand, Mr. Crunden, that you say that when these units of equipment are taken out of a station or a place and put into a store house, and then put into another situation or station, they are all taken out [fol. 9179] of the storehouse at salvage value.

The Witness: They are taken out of the storeroom at the price they went in the storeroom.

Mr. Shuler: All taken out at the price they went into the storeroom.

The Witness: Yes.

Mr. Shuler: And not at the present-day price when they are taken out of the storeroom.

The Witness: The general practice in that respect—There are several ways of treating the problem and I will give you a generalized statement, because I cannot tell you exactly what the Ohio Bell people do—This would be the general idea; you would keep a running account of the book average cost of the items of that kind carried in the storeroom, and you disburse all items at that price, so long as that average was good. From time to time, you would change the average.

Mr. Burr: Mr. Crunden, in using the illustrations that you have, there is also present the item of labor lost is there not?

Mr. Shuler: We have excepted that all the way through.

Mr. Burr: That is understood?

Mr. Shuler: Yes, that is understood. Now, your store supply cost will vary from time to time as prices fluctuate?

The Witness: Yes, sir.

Mr. Shuler: So that if something went into stores at ten [fol. 9180] dollars and present prices are twelve dollars, it comes out into the new location at twelve dollars doesn't it?

The Witness: No, it does not, because I said book average cost and not current average cost. For instance, supposing for the time being you are passing new items into your storeroom account at ten dollars; such being the price for which you buy them daily, during that period at which that ten dollar item is in effect, some of these items in good condition come back to the storeroom and are commingled with the new stores which are taken into the room at ten dollars, because that is the current price; at another date a lot of them come in at a changed price of eleven dollars. At the same time, some old items come out of old plant at eleven dollars and are mixed in with that plant. Now, you get an average cost somewhere in the neighborhood of ten added to eleven, divided by two, which is $10.50. It means you have taken one item out at ten dollars and used it at ten, and another item out at eleven dollars and used it at eleven. If you were able to sit in the storeroom and follow a particular item through and find an item that came in at ten dollars and went out as $10.50 and another that came in at ten dollars and went out at $9.50, that would be one thing. But that all comes out — clearing the storeroom account.

Mr. Shuler: From 1914 to 1924, you will admit that there has been a gradual increase of prices.

The Witness: Yes, sir.

[fol. 9181] Mr. Shuler: Now, let's take a pole and start it in at 1914 prices at $10.00 and run it through this same series that you have this pole, which you have kept at a static price. Wouldn't you then, although the pole originally cost the company $10.00—Wouldn't you then through this method arrive at a larger annual rate of depreciation than 99 cents.

The Witness: No.

Mr. Shuler: You think not.

The Witness: No.

Mr. Shuler: I don't care to take the time now, but I would like to have you give me that.

The Witness: You mean to say by that illustration you won't do that. Furthermore, I would like to follow that up in this way, recurring to this proposition of handling the supplies in the storeroom. Let us assume instead of using an average cost that somebody used lower than the present day cost. Suppose he took the pole into the storeroom at ten dollars and disbursed at twelve dollars. Then he would have two dollars discrepancy in his supply account. What happens to that two dollars credit? That remains in the account. As soon as the supplies inventory is taken that two dollars is credited back to the plant account, so that the thing would be bound to adjust itself in the long run. You cannot get away from the uniform system of accounts if you are disposed to. And we are not disposed to.

Mr. Shuler: I admit to one that is not perfectly familiar [fol. 9182] with that method of finding the service life, it is a little bit confusing and one conceives he sees holes in it, which might on the test not be so.

The Witness: The whole subject is a difficult subject. I think one might say of depreciation what Mr. Pickwick said of politics, it is a difficult subject of no inconsiderable magnitude.

Mr. Dotson: For the purpose of your accounting you carry the property on the books of the company at all times at 100 per cent value?

The Witness: Not value; 100 per cent cost.

By Mr. Dotson:

Q. I mean cost?

A. Yes.

Q. And that is done until the end of the service life of the property, when it is taken care of by your depreciation reserve is it not?

A. That is correct. That applies as I say to these minor items that are going in and out continually. That would not apply to a large switchboard. It could be individualized for retirement purposes.

Q. Now, you have the composite and component depreciation rates. If I understand you correctly, the component depreciation rate is based upon the life in service of a par-

ticular class of property, whereas the composite rate is based upon the average service life of various classes of property used by the company?

A. That is correct. The true depreciation rates are the so-called component depreciation rates. The composite rate is an accident. It results from the accidental weighting [fol. 9183] produced by the depreciation rates of the several classes of property which are embodied in the composite.

Q. Now your company, the Bell system, uses the composite rate does it not of depreciation all through its method of accounting?

A. No, we use the component rates, when you get down to the real accounting, but you have to have some compendious way of referring to this rate, so we always refer in ordinary conversation to the composite rate.

Q. The associated companies employ the same method of bookkeeping with reference to the depreciation account as the A. T. & T. Company does, that is, it uses the component rate in each class of property?

A. Yes, sir.

Q. And computes its depreciation reserve on that basis?

A. Yes, sir. Of course, where the relative weightings of the property do not change, you can apply your composite rate and get practically the same answer as you would by going to the trouble of applying your component rates. Sometimes we have done that.

Q. Referring to your testimony on page 615 of your testimony in chief, you speak of a turnover cycle method. I am not sure that we are clear on your conception of the turnover cycle method as you referred to it. Would you explain that in a few words?

A. Yes, I mean this; that the books of the telephone companies are nowadays and have been for many years, kept so as to show the gross additions to each class of property and the amounts displaced as well as the net additions. [fol. 9184] Now, by taking the property at any date and cumulating backwards the gross additions until they reach a sum equal to such property, the amount of time represented by the period of such cumulations of gross additions is a close approximation of the average service life of that class of property. A simple calculation based on the same mathematical principle can be made by taking the displacements of such class of property and cumulating them in

reverse chronological order, until the cumulating amount equals the total amount of plant of that class as it existed at some past date, the total amount of, and then the period of time from the beginning of such calculation backwards to that past date will give you the same close estimate of the average service life.

Mr. Shuler: Would that be true of your gross additions in a very rapidly growing and extending plant?

The Witness: In a very rapidly growing plant you would have to take the factor of growth into account.

Mr. Shuler: Certainly.

The Witness: Yes.

Mr. Shuler: That line would not show the true service life?

The Witness: No, not without some adjustment, and that error or dispersion would increase according as the rate of growth increased generally speaking. For *or* ordinary rates of growth, it is small, but with stupendous growths, it is immaterial.

Mr. Shuler: In a static plant it would be worthless.

[fol. 9185] The Witness: There would be no error. It would be a perfect calculation in a static plant.

Mr. Shuler: But supposing it has been static for ten years.

The Witness: So much the better.

Mr. Shuler: It would be, eh?

The Witness: Yes.

Q. The term, "Turnover" I presume is the term used, but it seems an incongruity to apply to a static plant?

A. Yes.

Q. But turnover may be done by replacements?

A. Turnover of the constituent elements.

Q. And it may happen to include the gross additions which you do include, as well as replacements?

A. It may happen—You mean that the calculation would be equally good both ways?

Q. Yes.

A. Yes, it would give you the same answer.

Q. Could you in a word state just what you do include in the cycle of retirements and additions? Do you include all of them?

A. All of them of that class of property, yes, sir.

Q. That applies to all classes of property?

A. Yes.

Q. But you only apply it as to classes?

A. You can only apply it where you have sufficient data to successfully make the calculation. For instance, we could not apply that method of determining life to a conduit system, because we have not had sufficient experience in [fol. 9186] underground conduit.

Q. Do you take into account the salvage value of property in that cycle turnover system?

A. No, you have to go on from that point. It does not help with respect to salvage. That only furnishes you with part of your answer.

Mr. Gentsch: I have this formal motion here for an order —Asking for an order to make the A. T. & T. a party. I do not want to argue the matter at all. But supplemental to that, I have prepared a further motion. I will say I just got this from the stenographer and she was hurrying and there are a lot of errors that I had to correct by chance, and possibly, I may have omitted a few of them now. But I have got a further motion to require the American Telephone & Telegraph Company, if this first motion is granted, to submit the cost of all apparatus and supplies sold by the Western Electric Company to the Ohio Bell Telephone Company during the year 1923, basing my grounds for that motion upon the grounds stated in the motion to make the A. T. & T. a party. This was gotten together very hurriedly, and I will file a supplemental brief to what I have filed here on several phases of the law.

Commissioner Poor: It may be filed. Counsel have asked about further time on this cross-examination. How much time do you expect to take up in the week of May 5th, with the Dayton Telephone case? I see on the calendar it is [fol. 9187] down here for two days, the fifth and sixth.

Mr. McConnaughey: I doubt if we can finish in two days.

And thereupon the further hearing of this matter was adjourned to Friday Morning, April 25, 1924.

[fol. 9188] Friday Morning

April 25, 1924.

And also A. B. Crunden, resuming the stand for further cross examination, continued his testimony as follows:

Cross-examined by Mr. Dotson:

(Last question and answer read.)

The Witness: I wanted to add another couple of sentences at that point, which I did not have time to add. It was in my mind that perhaps I had not made entirely clear, although I thought I did, that this re-use proposition applies only to the material constituent, and not to the cost of installation or the cost of removal. That is, if a pole should be re-used, that the original installation cost of the pole in the first location, would be a loss that would culminate at the time of the retirement of that pole from the first location. You get that loss then. The only item you carry over from the first life to the second is the material cost of the pole, which we treat at the average cost to the corresponding item now, if it is equivalent to new for our use. I think I made that clear, but I wanted to reiterate it.

And the other point I had in mind was this. I think Mr. Shuler said that the turnover cycle method would create [fol. 9189] an error in a period of rising prices. Now, that is perhaps susceptible of misunderstanding, and I would like to clarify that a little bit. Per se it would create no error. The turnover cycle method would show certain results, one of which would be that you were in a period of rising prices. Now, if you were to blindly accept the results without reasoning or regarding the factors in operating, of course, the error would be in you and not in the method. Perhaps that is a fine distinction in which you gentlemen are not interested. But I am trying to bring out the fact that the turnover cycle method cannot be applied blindly, that you must analyze the factors which you are operating and allow for them; that is necessary in any event, because what you are ultimately interested in is not what has happened in the past, but what is going to happen in the present and in the immediate future. Now, that is not necessarily the same as has happened in the past.

Mr. Shuler: Then just a question, I think, to clear it up. From Mr. Schneider's testimony I got the idea that that method was an exact and accurate method, because it was taken from the books of the company. Now, as you show by your statement, it is not that, but it requires conjectures, does it not?

A. No, it does not require conjectures, but it requires judgment as to how far the conditions in the present and

in the immediate future will parallel those that have obtained in the past during the period covered by your study of the turnover cycle figures. In other words, Mr. Shuler——

[fol. 9190] Mr. Shuler: I think you and I agree, except I prefer the word conjecture. And I think it is more or less of a guess, and I object to your word judgment, because judgment has a more serious meaning to me and involves a better basis for arriving at your conclusion than does conjecture.

The Witness: You are at perfect liberty to use the word "conjecture" of course. I would not take that privilege from you.

By Mr. Dotson:

Q. You mean by judgment that there is an estimate made by the accountant?

A. By the engineer, Mr. Dotson.

Q. By the engineer, which the accountant recognizes by placing it in the books of the company?

A. That is correct.

Q. Now, the depreciation that will occur due to unforeseen conditions, but based upon your experience of the past, there are——

A. There are certain things you cannot prove are going to happen, but which are likely to happen, because they have always happened.

Q. Yes.

A. Yes, that is the idea, Mr. Dotson.

Mr. Shuler: Now, I want to get clearly in mind, what is the thing the engineer must pass judgment upon in a rapidly growing business? Isn't it rather he must take into consideration whether the business in the future will grow in the same proportion that it has for a period in the past?

The Witness: That is one factor. And then another is whether the probable future salvage of this class of plant will be the same as it was during the turnover cycle method or any other method that he may take for study. Another [fol. 9191] point is as to whether costs of removal have increased during that period. And another is whether there has been a progressive change in the plant or substitution in the plant, which changes the life characteristics of the plant. That is the most important.

Mr. Shuler: Then after all the human element and personal opinion is a great factor, even with the turnover cycle method?

The Witness: Yes, sir, that is recognized by the uniform system of accounts, because the Interstate Commerce Commission says that companies should be prepared to furnish the Commission upon demand the rules and a sworn statement of the facts, expert opinions and estimates upon which they are based. That occurs on page 67.

Mr. Shuler: I had obtained the impression from Mr. Schneider that by simply *by* going to the books and getting the gross additions and taking them back, you would — an accurate service life result. But that is not true.

The Witness: No, sir.

Mr. Burr: Oh yes, it is with reference to the past.

Mr. Shuler: No, it is not.

The Witness: With reference to the past, yes. But I understood your question to mean that you would get the exact figure that you needed for the present and the immediate future without subjecting it to the element of judgment.

Mr. Shuler: The books have sufficient records to go back fifteen years. During the last five years there has been [fol. 9192] a very rapid increase in price. Now, you want to determine the service life over that period of years. Wouldn't the fact that the last five years of the plant the gross additions had been exceedingly large and abnormal, affect the service life arrived at, unless you took into consideration these elements upon which judgment must be passed into consideration.

The Witness: It possibly might but not necessarily.

Mr. Burr: But you are assuming they have been normal.

Mr. Shuler: Certainly.

Mr. Burr: You are assuming that for the purpose of the question.

Mr. McConnaughey: Mr. Crunden, isn't it a fact that both the increase in the plant, growth of the plant, and the enhancing of prices, the increase in the range of prices, would both affect the showing of this turnover cycle method.

The Witness: Yes, they would. At these rates of growth the influence would be comparatively slight.

Q. But there would be an influence?

The Witness: At extreme rates of growth the influence would be marked. There would be an influence theoretically at any rate.

Mr. McConnaughey: Suppose that over a period of five years there had been an increase of 50 or 75 per cent in the price of property in place, I mean the unit prices, and a normal growth; that also would affect the showing of the turnover cycle method, wouldn't it, and throw it out of line?

[fol. 9193] The Witness: That would influence it to some extent, but the exact extent would have to be determined by a study of the particular property.

Mr. McConnaughey: The particular figure, certainly; and it would have a tendency to show a shorter life rather than a longer life.

The Witness: Yes. You would have also to take into account whether the rapidly rising price level continued to the end of the term which you had under study or whether there was a rise and then a decline.

Mr. McConnaughey: If the prices struck about an average, it wouldn't make any difference, would it.

The Witness: No.

Mr. Shuler: If the records of the company were insufficient to make one turnover, you could not use the method, could you?

The Witness: Unless the information was sufficient to enable you to make a reasonable projection of the balance of the necessary term. In the event you could not do that, you would have to fall back upon the expert opinion and the judgment of the engineer in the manner contemplated in the uniform accounts.

Commissioner Poor: Now, gentlemen, I think we better go back to our old rule, that the counsel on this side of the table who is examining, doing the cross examining principally, should continue and conclude his examination be-

[fol. 9194] fore he is broken into. It destroys his continuity of thought, and with three or four examining counsel it is difficult to get anything out of the examination. If the other counsel should want to ask questions, let them make note of it and they will be given an opportunity. But they need not break in on the man who is making the principal examination. I do not believe we are getting an unscram-

bled egg record by going at it that way. I think it is better the other way.

By Mr. Dotson:

Q. Following the inquiry just made, Mr. Crunden, do not the physical characteristics of the plant elements have great weight in influencing the turnover cycle, a greater weight I mean in influencing the turnover cycle than the fluctuation in prices?

A. That would depend upon circumstances. I can talk about this as a theoretical proposition, and it might or might not in theory.

Q. The theory you contemplate shall reflect the facts?

A. Yes, sir. We can agree upon the accounting theory and then the engineers must supply the facts.

Q. If the theory is substantially in compliance with the facts, and assuming that it is in compliance substantially with the facts, then what would you say about the physical characteristics, the influence of the physical characteristics, and the weight of that upon the turnover cycle method as against the fluctuation of prices?

A. If they were the predominant factor, of course, they should receive predominant consideration. Whatever the [fol. 9195] fact is should be determined and demonstrated so far as possible.

Q. Do you in your turnover cycle method include the additions to plant which take care of the actual growth of the plant due to the growth of the community and the additions of the necessary plant to take care of additional business? I do not know whether that has been brought out in your statements or not. I would like to know about that?

A. The proposition is that the turnover cycle method should be applied to the books as they stand and a certain result developed, and then to that result the engineer applies the necessary corrections. So that if it were a growing company, if considerable new business were being added, that would be reflected in figures which would be obtained by the turnover cycle method. That would not have any particular bearing on the proposition, Mr. Dotson, as you can see by recalling my statement to the effect that the same mathematical result could be obtained by cumulating the retirements in reverse chronological order

to a point in the past at which they agree in amount with the then standing property. In that case the additions obviously would not have anything to do with the result obtained.

Q. Then your answer would be that it does not include as I have referred to it the additions to plant?

A. It does include it, but it does not have any effect upon the application of the method.

Q. You mean by that that it does not change the percentage of depreciation—well, the percentage of depreciation? [fol. 9196] A. It may or it may not.

Q. Does the turnover cycle method seek to keep dollars in property intact at all times?

A. Well, the object of the turnover cycle calculation is to shed some light upon the average life of the property. That is as far as it goes.

Q. It does not then undertake to be governed by the dollars, the investment in dollars, in the property at all times or at all stages? Do I make myself clear?

A. Yes, sir, I am going to answer that. The object sought, the final object of the whole business, so far as the books are concerned, is to charge such amounts for depreciation expense as will cover the cost of the property that is used up. Now, in arriving at the amount of the charges, you have to find certain things; the average service life, the salvage, and the cost of removal and so on. Now, to find the average service life, you have to go to some things, and the turnover cycle method is a thing used in determining that average service life; so it is one of the things used in determining that thing. Does that make it clear, Mr. Dotson?

Q. That expresses it from your standpoint. That is what I want to get at.

A. Yes, sir.

Q. Now, calling your attention to Crunden's Exhibits 17, 19 and 21, on what was the realized depreciation based as shown in these Exhibits?

A. The realized depreciation reflected in Exhibits 17 and 18 and 19 was derived from Exhibit 16, columns 9 and 12. Exhibit 16 is that Exhibit which is on the larger piece [fol. 9197] of paper.

Q. Yes, I have it here.

A. The realized depreciation in Exhibit 21 is purely a

mathematical calculation. It is not based on any of the other Exhibits introduced.

Q. Now, what columns in Exhibit 16 did you say that was based on particularly?

A. Columns 9 and 12.

Q. 9 and 12. Now, does the annual mortality curve on chart D of your Exhibit 14 apply to your Exhibit 21?

A. No, sir.

Q. It does not?

A. No, sir. Chart D of Exhibit 14 was taken from Exhibit 13, and Exhibit 21 is entirely a separate Exhibit, designed to express one particular phase of the matter. It does not hook up with the other Exhibits, although the principles that are involved carry unchanged through all of these Exhibits.

Q. Then you do not use the mortality curve appearing on chart D, Exhibit 14, in making your chart on Exhibit 21?

A. Not that particular curve, no, sir.

Q. Well, what kind of mortality curve did you use?

A. Why I used a typical mortality curve which I took at random. The results will be of the same general order if you take any reasonable mortality curve.

Q. Could you give us that mortality curve?

A. Yes, I will call you off the figures if you like.

Q. Well, let's get it in the record.

A. For every $100.00 of plant, the retirements would be as follows: First year, $92.00; second year $370.00; third [fol. 9198] year $763.00; fourth year, $1,284.00; fifth year, $2,035.00; sixth year, $3,158.00; seventh year, $5,158.00; eighth year, $6,298.00; ninth year, $7,044.00; tenth year, $7,582.00; eleventh year, $7,958.00; twelfth year, $8,258.00. Now the years from '13 to '24 inclusive are the reverse of the figures just quoted. That is to say the thirteenth year is $8,258.00 and the twenty-fourth year is $92.00.

Q. Now, you have no chart of this curve in your possession?

A. No, sir, it would be very easy to anybody to make one. It is just simply a question of plotting one on a piece of paper.

Q. Referring to your Exhibit 17 again, known as net investment reserve for accrued depreciation at beginning of year, this curve as shown in the Exhibit between the tenth and fifteenth year inclusive, both, the net investment for

accrued depreciation remains constant apparently; are we to understand from this that after a period of years these quantities become constant?

A. On the average, that is, after the net investment becomes static, the reserve will fluctuate above and below a certain line. It won't run straight across the page in the manner described in this Exhibit in actual practice, because practical business reasons will make it necessary to vary the amount of retirements in successive years, but it will fluctuate above and below a given line.

Q. But in charting that you in practice do not show that fluctuation; you show the given line——

A. Yes, in an Exhibit of this kind.

[fol. 9199] Q. And you use the given line because it reflects the average condition of the plant during that time?

A. The average condition of the reserve.

Q. Of the reserve, I should say?

A. During that time.

Q. Now, if these items remain constant, is it true that the ratio of those items would remain also constant?

A. Under those conditions the ratio would remain constant, yes, sir.

Q. Then that being true the accrued depreciation is a constant percentage of the net investment when the amount of the investment remains constant; that is true, too, is it not?

A. Yes, with the reservations I have made regarding fluctuations in actual practice.

Q. And that is true whether applied to the accrued or the realized depreciation, isn't it?

A. Yes, that is true. That is shown by Exhibit 18, Mr. Dotson.

Q. Further with reference to Exhibit 17, does the shape of the increasing part of the curve, reserve for accrued depreciation—that is the designation—and the decreasing portion of it reflect any way the shape of the mortality curve which you have assumed in these examples?

A. I stated in my explanation of these Exhibits that I had based the calculations upon the retirement at the end of five years uniformly. That is shown at the bottom of Exhibit 16. That is not a mortality curve retirement, but a retirement at the end of average life, but had a mortality

curve retirement been assumed, you would get the same general order of curve in Exhibit 17, as you have.

[fol. 9200] Q. I see.

A. It would not be exactly the same, but the principles would be illustrated by it equally well.

Q. Well then, explain the causes of the variation in the increasing and descending portion of the curve designating "reserve for accrued depreciation" in Exhibit 17, that is, why the first part is concave and the descending part is convex? Why should it take that form?

A. That simply happens because we have the comparatively few items embodied in that Exhibit. We have only got thirty taxicabs altogether in this illustration. The shape of the line there on Exhibit 17, representing the growth of the reserve, is accidental to that extent. That might be more concave or less concave, depending on the number of items which you take, but it would not change the general principle, which is, that as the investment increases the reserve increases, and after the investment has ceased to grow the reserve ceases to grow, and with the eventual retirement of the property the reserve is extinguished.

Q. Then has this illustration or chart any practical significance in the telephone case such as we have here, where it includes a property of the magnitude of the telephone properties of the Ohio Bell, when this is confined to just a small class of property, and as I understand you, might show a different curve if applied to a property of large magnitude.

A. Well, every property will show a different curve, of course. The object of this Exhibit and those that went with it was to endeavor to make clear the fundamentals of depre-

[fol. 9201] ciation accounting to the gentlemen who are interested. If it does that it serves its purpose. If it does not do so, we should not have introduced it.

Q. I would like to have you explain Crunden Exhibit 18 in terms of income?

A. If I apprehend your question, the answer is this: That the income will not be properly stated unless there is included in the expenses deducted from the gross revenues in the ascertainment of the income depreciation according to the ball and chain line on this Exhibit, which is designated annual expense of depreciation and covers the depreciation upon the straight line basis. If in the ascertainment of the annual income the deduction for depreciation expense were made on the basis of the annual realized depreciation,

it would not spread the depreciation expense evenly over the life of the property depreciated, and the net income arrived at would be fictitious. It might be more or less than the true income.

Q. Then may we truthfully assume and say that this diagram as to annual realized depreciation is an arbitrary assumption, or is it one that is a result of experience, and is in point in matter of experience?

A. Oh, it is decidedly in point, both in the matter of the principles involved and in the matter of experience.

Q. Referring to Exhibit 19, this still refers to what is called the taxicab Exhibits; is this Exhibit or diagram really representative of any telephone plant which you have ever had any personal experience with?

[fol. 9202] A. Well, this Exhibit illustrates principles and the principles involved apply to every telephone plant, in fact, to every public utility plant in the United States in my judgment.

Q. And according to your view the value of that lies in the principle which it demonstrates, that you claim can be made use of in any telephone plant?

A. Yes, sir. The problem illustrated in that Exhibit is the same one that is exemplified in the controversy regarding the so-called fraternal insurance. Now, I haven't any objection to fraternal insurance as long as the man that is getting it knows that he is getting it, but if he thinks he is getting the equivalent of the Old Line Insurance, he is under a false impression. The item on that chart representing annual realized depreciation, if it were taken as the measure of the expense, or, in the case of the fraternal organization, of the actual accruing loss, would mislead everyone, because it does not represent the loss, and the amount by which it fails to cover the loss is illustrated by the solid line in the last years of that chart, where the submerged loss culminates and proves a burden too heavy to be borne. And that shows where the fraternal insurance has broken down in this country.

Q. Now, the part of the line that you last mentioned is the one that extends upward?

A. Yes, sir, the annual realized depreciation.

Q. Taking Exhibit No. 21, I call attention to the annual realized depreciation: if the plant grows five per cent per year, you show this line as practically a straight line

[fol. 9203] after the plant has reached a certain stage in its growth?

A. Providing the geometrical rate of growth continues unchanged.

Q. Yes, assuming that. Now, is it true, assuming these facts, that the realized depreciation after plant has reached a state of stability has a constant value?

A. That is, if the plant reaches a stable age distribution, accompanied by an invariable rate of growth.

Q. Yes, as reflected by this line represented as realized depreciation when plant grows five per cent?

A. Yes, that is actually what this chart shows, Mr. Dotson.

Q. That as a matter of fact then would be true and that same statement would apply to the other lines representing the annual realized depreciation when plant grows ten per cent per year?

A. Yes, sir.

Q. Also in the other case grows twenty per cent per year?

A. Yes, sir.

Q. And that fact is reflected in this Exhibit 21 by the straightness of the line as you have extended it over the chart?

A. Yes, sir. To put the thing in a paradoxical form, if the rate of growth were infinite, the realized depreciation would be zero, although the actual depreciation expense would remain the same.

Q. Well, the annual realized depreciation is ratably less in a plant that is growing than in one that is not growing, isn't that true?

A. Yes, sir—may I have the question again? I don't know that I got it.

[fol. 9204] (Question read.)

A. Yes.

Q. Then the converse would be true, that the reduced depreciation is proportionate with the growth of the plant also?

A. That is, with the realized depreciation?

Q. Yes, is proportionately less.

A. Some smaller percentage of the annual expense or depreciation according as the rate of growth increases?

Q. Yes.

A. That is correct, yes.

Q. Now, the annual rate of plant growth, you mean by that the additions in any one year, that is, net additions in any one year, that is, net additions in any one year to total plant at the beginning of the year; is that what you mean?

A. Yes, I mean that if the net additions at the beginning of the first year were $100,000, representing the original property, that in the second year you would add $5,000 to that and the next year you would add $5,250 to that, the last mentioned figure being five per cent of the original sum, plus five per cent of the amount added in the first year.

Q. On Exhibit 21 the line labeled annual expense of depreciation, is that correctly drawn on that chart? In other words, should it not curve upward as the curves below that in starting?

A. No, it should not.

Q. What is the reason?

A. Well, because the annual expense of depreciation in this plant, which is assumed to have continuously the same depreciation characteristics, is the same in one year as in another, whereas in the case of the realized depreciation, the [fol. 9205] plant will be new in the first year, and with the class of mortality curve assumed the retirements will be negligible, that is to say, in the first year the retirements are $92.00, equal to .07 per cent of the property, whereas the straight line depreciation for the same year is the full six per cent as it is in any year.

Q. You have described the basis in this statement then upon which you predicate or by which you justify the line in the form it appears on this Exhibit 21?

A. Read the question. I didn't get it.

(Question read.)

A. I am probably a bit thick, Mr. Dotson, but I don't get that.

Mr. Dotson: Just cut that out.

Q. Don't you by this method accrue more depreciation in the first years than in the latter years of the service life of the property?

A. No, sir, that line headed "Annual expense depreciation," which is on the six per cent level, would spread the accruing depreciation evenly over the life of the property in service. It is a straight line formula.

Q. Now, a number of witnesses have used the term, "Prove in" in relation to proposed additions or extensions

to plant. What is *the* meant by the term "Prove in" as you understand it?

A. I never used the term purposely, but I presume the additions will be justified on the basis of good judgment.

Q. Your understanding then of it is that it simply means that the property that is used or installed meets the require-
[fol. 9206] ments.

Mr. Burr: No, that is not what he said.

Mr. Dotson: I thought he did.

Mr. Burr: Not that it meets the requirements, but that the expenditure is justified.

The Witness: Well, it simply means that you build a stadium here in Columbus, and it either proves in or it does not prove in, that is, it is proportionate to the size of the University and the people who make use of the Stadium, or it is inadequate, or it is too large and wasteful and extravagant. If it is the right sort of Stadium, then it proves in.

Q. Yes. Now, applying this term to an example, suppose we have a demand for service which is in excess of the existing cable facilities in a given region, and by substituting a larger cable, the additional subscribers who can be served by it will produce revenue enough to prove in above the entire cost of substitution, including the loss of the cable taken down, that is a case, isn't, it, in using the term "Prove in"——

A. That is, certain cable is inadequate you mean?

Q. Yes.

A. And they substitute a larger cable?

Q. Yes.

A. Well, I should say the term could reasonably be used that way.

Q. Just one more question. The figures which you gave on the mortality curve which we were discussing were those based on the gross or the net retirements of the plant?
[fol. 9207] A. No, they would be based upon all retirements. The retirements are the retirements. They are not involved in the additions.

Q. They are based then on the actual retirements?

A. Yes, sir, in this hypothetical illustration. They were not taken from the experience of any particular class of property. I simply asked one of my men to take a reasonable mortality curve.

Mr. Dotson: I think that that is all that I have to examine him on, gentlemen—No, I think there is one more question.

Q. Referring to Exhibits 13 and 14 of the Crunden Exhibits, table A, Curve D; do the rate of retirement or the shape of the curve as shown follow any natural observed law? That was the question suggested here. I haven't got the charts here.

A. I will lend you my chart.

Q. Well, I have 14 here, I see.

A. You mean the precise curve that is drawn on the piece of paper, whether that is based on some actual experience on a particular item or class of plant?

Q. Any law that has been established from experience, I assume, by which the curve is governed?

A. Not the actual curve drawn there. That is illustrative of the practical condition. The practical condition is that when the class of property is of a given type that it tends to have a certain average life, and the majority of the retirements cluster around that life. But there are some weak and unfortunate members that drop out early in [fol. 9208] the existence of the plant, and there are some strongly resisting and fortunate members that linger along long after the average life.

Q. Then the curve here would be rather an arbitrary curve than a curve true to experience or observation?

A. I am not offering the curve as illustrative of actual experience with any class of plant. I merely am illustrating the principles involved and I deliberately took curves such as these on that account, so that there would be no confusion; that is, they are generally representative, without being an attempt to show or prove in the experience on any particular class of items.

Recross-examination.

By Mr. Kinnison:

Q. Mr. Crunden, will you refer to your testimony on page 592?

A. Yes, sir.

Q. You will notice that I interrupted you there with a question where I said, "We will use the word cost as the basis upon which you base your depreciation charge. What do you mean by cost?" You say, "I mean the amount

shown on the books." I made an additional inquiry, "The actual cost?" You said, "Oh, yes," I said, "That means the actual cost of construction?" And you said, "Generally speaking it is the actual cost of construction, yes sir." Now, I have in mind the actual unification process of the Ohio State and the Ohio Bell in the Canton area, in which I will assume that the cost of construction of the plant of [fol. 9209] the Ohio State Telephone Company in that area was one figure and the Ohio Bell Telephone Company at the time of its consolidation or the exchange of securities paid still another figure, and that an appraisal of the property of the company would still be another figure. Now, to which of those three figures would you apply your depreciation rate?

A. The accounting would be based upon the dollars of that property as shown on the general books of the Ohio Bell Company as a result of the merger of the two companies.

Q. Then, so that I may understand, do you mean that irrespective of the actual construction cost to the Ohio State Telephone Company that you would base your depreciation upon the book values which the Ohio Bell would set up after it had acquired the Ohio State?

A. The accountant necessarily concerns himself with the amounts on his books, Mr. Kinnison, and the object of the depreciation account to him, is to charge out in the expenses in equal annual installments the amounts shown in the fixed capital with respect to certain property, so that it would be the amount that was placed on the books of the Ohio Bell Company as a result of the merger of the accounts of the Ohio State Company with the Ohio Bell.

Q. Well, I am not speaking as an accountant, Mr. Crunden, and you can assist me by confining yourself to what I am trying to get at, if you understand me, that is to say, the cost which the Ohio Bell would set up on its books would not necessarily be the cost of construction to the Ohio State, would it?

A. Why it would depend, it would seem to me upon [fol. 9210] whether the actual cost had been placed upon the books of the Ohio State. I was not in on this merger of the books, but my understanding—perhaps you know about this feature—is that the accounts of the two companies were merged as to their fixed capital. If that is true, if that understanding is correct, then if the books of the Ohio

State Company showed the actual cost, that actual cost would now be reflected on the Ohio Bell. On the other hand if the Ohio State had charged more or less to its plant account, that fact would also be reflected.

Q. In your mind should there be any relation between the cost of acquiring the Ohio State property to the Ohio Bell Telephone Company and the book values which they should set up for the purpose of depreciation, assuming that the records of the Ohio State Company are complete to the extent of showing actual cost?

A. I dislike to talk ex cathedra about a merger with which I was not connected, but what should be done is to write off the amount that is on the books of the Ohio Bell Company.

Q. That is meaningless to me, Mr. Crunden. I have given you a hypothetical case, which I think has some basis in fact. For example, the Ohio State property, we will assume, cost one figure, which could be ascertained, we will assume, from the records of the Ohio State property; the Ohio Bell Telephone Company took it over; whether you call it a merger and consolidation or a purchase, it paid still another figure; and the appraisal might still be another figure. When you attempt to depreciate that property would you depreciate on either of those figures or would [fol. 9211] you set up a new figure on the books of the Ohio Bell Company for depreciation? I have just given you the hypothetical question. I am not asking you to call upon your lack of information or your information concerning the actual way in which it was done. But just confine yourself to that question.

A. Let us assume that the Ohio State——

Q. Let us take the assumption the way I have it.

A. Well, there is more than one possibility.

Q. I realize that. I want you to give it that way.

A. Let us assume that what was done was to——

Q. If you will pardon me again, Mr. Crunden——

A. I am asking your question again.

Q. Don't do it with another assumption.

A. I am coming down another street. I am turning a right hand corner instead of a left. I won't use that phrase again. If the amount placed on the books of the Ohio Bell Telephone Company had been confined entirely to fixed capital and was the amount necessary to balance the payment that it made, which was, of course, reflected in its

liabilities; then the amount of fixed capital so added would be the amount that should be depreciated and it would be the actual cost to the Ohio Bell Company.

Q. That is to say, irrespective of the actual construction cost to the Ohio State Company, you would set up as a basis for depreciation the actual cost to the Ohio Bell Company; is that correct?

A. Yes, that is right. Now then——

Q. Are you through?

A. Yes. Now, if the actual cost to the Ohio Bell Com- [fol. 9212] pany, was the amount at which the property had stood charged to the accounts of the Ohio Sate Company, then that would be the same figure. So that it would be the same figure in any event.

Q. You mean to say if the Ohio Bell bought it at book figures, which would chance in those cases to be coincident; is that your answer to my question? That is to say, if the Ohio Bell bought it upon the book values as shown by the Ohio State, of necessity the two would be identical? That is all you mean?

A. Yes, that is what I mean.

Q. As a matter of fact, Mr. Crunden, I think it has been definitely claimed by the telephone company in this case, taking it as an assumption, that there was no purchase of the property of the Ohio State Telephone Company by the Ohio Bell, but that it was a consolidation which was effected by an exchange of securities. How would you determine the cost then to the Ohio Bell Telephone Company of the physical properties of the Ohio State?

A. Well, I would take the facts in that situation and lay them before the Interstate Commerce Commission and get the prescribed accounting, set up my books on that basis, and thereafter charge depreciation according to the way the books were set up.

Q. That is to say you would go forward on the set-up which the Bell would make after the acquisition of the property?

A. Yes, sir, and that would have to conform to the uniform system of accounting.

Q. However, we will assume this case being tried right here, that the Ohio Bell Telephone Company is going to [fol. 9213] attempt to depreciate certain property values and set up a fair rate of depreciation; should in your opin-

ion that depreciation be set up as against what it cost the Ohio Bell Telephone Company or what the physical property actually cost the Ohio State Telephone Company?

A. Now, you are asking——

Q. Not as an accounting theory.

A. No, but that is precisely my trouble. You take an accountant and you make the preface that you do not want to ask him questions an an accountant.

Q. I don't believe that question necessitates going into any theory of accountancy. I believe it is susceptible of a plain answer.

A. It no doubt is from the man who is competent to make it. But I am qualifying here as an accountant, and frankly that is the only standpoint that I feel I am an expert from. I feel that I can talk loosely about that, but when you step outside that and ask me to disregard my qualification and to speak on some other basis, I do not think that is fair to me.

Q. I want to be fair, Mr. Crunden, but I understood that not only have you qualified as an expert accountant, but that you have also qualified as an expert on depreciation. Do you want the Commission to understand that that had not happened?

A. No, I want them to understand that I have not, that is, I claim to be an expert on the accounting feature of depreciation. I do not pretend to be an expert on the subject of engineering depreciation and the determination of the amount of depreciation of the standing property by its examination. I am not familiar in more than a general way [fol. 9214] with these propositions that we have to treat upon our books. I have to rely for that matter upon the judgment of the people who take up that branch of the work.

Q. Now, are we together on this proposition, that, waiving the question of a merger, ordinarily the Ohio Bell Telephone Company would make its depreciation charge as against the actual cost of the property to it?

A. On its books, yes, sir.

Q. That is the accepted theory of depreciation?

A. Yes. Understand, of course, that a great deal of accounting is done on the basis of averages, due to inability to treat the individual items with proper economy and the minimum of accounting expense.

Q. I believe you have testified and used the expression,

"Keeping the original investment intact," have you not?

A. I do not believe I used that. I may have done it.

Q. How about keeping the capital whole; did you use that expression in attempting to find a basis against which the depreciation charge should operate?

A. Yes, the idea is that you charge the expenses in such wise that the entire cost of property consumed in operations is covered by the charges.

Q. Now, that cost of property that you have testified to has in mind not the acquisition of used property from another company, does it, but does it have in mind an original purchase by the same company.

(Question read.)

Mr. Kinnison: I will withdraw that question.

[fol. 9215] Q. I mean to say that ordinarily when you consider the theory of depreciation you have in mind property which the Ohio Bell Company originally acquired itself and immediately put into its own plant, and you do not have in mind the acquisition of the entire assets of another company, do you, and the transfer of it to your books?

A. Well, I have in mind any dollars reflected in the fixed capital accounts of the Ohio Bell, which are being consumed in operation. I do not care whether it was property that the company constructed or which it purchased or which it acquired as a result of the merger, so long as it was represented on the books of the Ohio Bell Company by charges to the fixed capital accounts.

Q. Giving to the company the right to make an arbitrary decision as to how they would place it upon the books?

A. So far as this broad phase of the problem is concerned, of course, the company has no such right as a matter of fact. It is tied hand and foot as to what it should put on the books, by the Interstate Commerce Commission's system of accounting. But that is another quarter section. We find ourselves on this proposition of depreciation with certain figures on the books, which are there, and our problem is to charge the loss of that property to expense.

Q. It is true when the Ohio Bell acquired the Ohio State it had to establish some figure on its books, didn't it?

A. Yes, sir.

Q. To that extent that act in itself was an arbitrary act on the part of the telephone company which might or might [fol. 9216] not be substantiated by the facts?

A. Well——

Mr. Kinnison: I will withdraw that question.

Mr. Burr: Let's have it understood that when reference is made to the acquisition by the Ohio Bell Company of the property of the Ohio State Company, that can only mean one thing, namely, the act by which the properties of the old Ohio Bell Company and the Ohio State Company were consolidated, the point I have in mind being, Mr. Kinnison, that acquisition is a matter of record here before this Commission and shows on its face that it was a consolidation under the statutory provisions covering that subject. So that it is just as proper to say that the Ohio State Company acquired the property of the Ohio Bell Company as it is to say that the Ohio Bell Company acquired the property of the Ohio State. As a matter of fact the two properties were rolled together, they were fused into one company by virtue of the consolidation Act, and the law specifically says that that is what happens. So that it is not, strictly speaking, an acquisition of property of the Ohio State Company or any other company by the Ohio Bell.

Mr. Kinnison: I am giving to this witness a hypothetical question. The Commission may apply the facts.

Mr. Burr: I thought that your reference a little while ago to the consolidation case meant that you were construing the consolidation as an acquisition by the Ohio Bell of property of the Ohio State.

Mr. Kinnison: I recall that when this case started you wanted it to be quite definitely known that there had been [fol. 9217] no purchase of the assets of the Ohio State by the Ohio Bell, but there was a transfer of title. The title to the property changed hands and passed to another corporation. Whether you call the transaction a sale or consolidation in terms of law, you are setting up a new book value, and I want to know how it was done.

Mr. Burr: The title changed hands by virtue of filing with the Secretary of State an agreement of consolidation.

Mr. Kinnison: The mode of it is entirely aside from the issue.

Mr. Burr: I do not quite agree with you, because when

you speak of a transfer, that ordinarily means that a seller clothes a purchaser with title to property formerly owned by the seller. Now, that is not what happens in a consolidation or not what happened in this case. The two companies, the old Ohio Bell and the Ohio State Company, entered into an agreement of consolidation. That agreement of consolidation was filed in the office of the Secretary of State by both companies, and there was not an agreement whereby the Ohio State agreed to convey its property to the Ohio Bell or vice versa. The agreement of consolidation, which was mutually entered into by the two parties, was filed in the office of the Secretary of State, and thereupon the law says that that filing vests the consolidated company the titles to the properties of the two constituent companies.

Mr. Kinnison: Which means that title has changed hands?

Mr. Burr: The title has changed hands, if you please [fol. 9218] but the title to the Ohio State Company's property did not, thereby become vested in the then Ohio Bell Company.

Mr. Kinnison: Became vested in the new company?

Mr. Burr: A new company was created by the act of consolidation. The two old constituent companies disappeared, because that has been settled by the United States Supreme Court in construing our Ohio law. And there was created by virtue of the filing of the consolidation agreement in the office of the Secretary of State a new company, in which was vested the titles of the property formerly owned by the two constituent companies.

Mr. Kinnison: I think that is absolutely true, but it is not germane to the proposition I am trying to raise here, Mr. Burr.

Mr. Burr: Very well.

Q. Mr. Crunden, I am going to give you another hypothetical case. Treat it as a hypothesis entirely, and the Commission will also. I am going to assume that the property which the new company acquired in the Canton area from the Ohio State Telephone Company cost the Ohio State Telephone Company one million dollars. I am going to assume that in an exchange of securities the approximate values which changed hands were $1,500,000?

A. That is, the Ohio Bell Company purchased from the Ohio State Company property worth a million and paid a million and a half.

Q. I am not going to call it a purchase at all. I am just giving you the hypothesis as I have already created it. Here we have property which costs the Ohio State Tele-
[fol. 9219] phone Company $1,000,000, cost them that, going back to your definition of costs as we have earlier reviewed it?

A. Yes, sir.

Q. Through a consolidation or merger or what not in exchange for that original cost of a million dollars, the stockholders of the Ohio State Telephone Company received evidence of interest in the new company to the extent of $1,500,000, whether by cash or stock in the new company or what not; that the fair appraisal value of that company at the present time is $2,000,000.

Mr. Burr: You say at the present time or at the time of the exchange.

Q. Let us say at the time of the exchange, for the sake of the hypothesis. Now, you are going to depreciate that property we are going to say. What will you depreciate it as against? The million, the million five hundred thousand, the two million, or will it still be another figure which the Telephone Company will set up on its books?

A. The correct way to answer that is to say that you will treat for depreciation purposes the amount that the company set up on its books.

Q. What is it? What would it be in that case, could you say?

A. That would demand a study of the merger by somebody competent to handle those things.

Q. Considering what elements?

A. Considering the uniform system of accounts.

Q. That directly traces it back to values, doesn't it?

A. I am not familiar with merger accounting. I have never accounted for merging.

[fol. 9220] Q. Haven't you a problem of values?

A. No, sir.

Q. Why not? I have given you the values.

A. The accountant does not treat values per se on his books. Books are set up on the basis of cost.

Q. What cost? There you have three elements of cost. What cost?

A. If I had the agreements before me and time to study them and people to advise me as to what the accounting principles were, I could decide what the entries should be. What ought to be done is to take a man like Mr. Van Zant, who has spent years studying this kind of thing, turn him loose, let him go down to Washington, and determine what is a correct system of accounting and set up of figures, and those figures should be used in determining depreciation.

Q. What do those figures on the books represent? They are not arbitrary, are they?

A. No.

Q. They must reflect some study of values, must they not?

A. I don't know whether values would be an essential part of such a study or not.

Q. Don't you depreciate against values which enter into original cost?

A. Not on the books, no. You cannot keep books otherwise than on the basis of cost.

Q. Then you say that entirely aside from what the property costs the Ohio State during the period of construction, entirely aside from what the Ohio Bell must have paid for it and entirely aside from what the property was worth at that time, that the company still has the right to set up on its books for purposes of depreciation an entirely new basis, from which depreciation will be figured?

[fol. 9221] A. No. It might be the proper way to place that upon the books, would be to place the amount upon the books of the old Ohio State Company; it may be that something else would be proper. That would involve a study of the merger by some competent person to determine what the correct accounting should be.

Q. You do not need any agreements or mergers; I have supplied you the facts; I have supplied you the facts for this hypothesis—three values?

A. I know but——

Q. Just a minute. I am not concerned with the theory of the accountancy of it. I am concerned with the dollars and cents which will be set aside for the keeping intact of cost. Now, what figures would you adopt if you wanted to keep intact the cost there? Would you adopt the million,

the million five hundred thousand, the two million or would you adopt some figure that some officer of the telephone company would set up on the books, and which you say would have to meet the approval of the Interstate Commerce Commission?

A. I would adopt the figure that met the approval of the Interstate Commerce Commission, because it is immaterial for that purpose in keeping books——

Q. I think you have qualified as an expert who is thoroughly familiar with the uniform system of accounts.

A. Yes, I am.

Q. And right at present the telephone companies are engaged in a wide campaign of merger or consolidation, call it what you will?

A. Yes.

Q. I presume you could then tell me what the elements are that enter into that book figure which the Ohio Bell Tele- [fol. 9222] phone Company would set up for the purpose of depreciation?

A. I have told you that.

Q. No, you have not?

A. Oh yes.

Q. No, you have not. You have simply told me they would set up the book figure, but you have not told me the elements that enter into it or upon what it is based?

A. That, as I say is something else. There are two questions we are discussing, and I think we are being confused. One is the proper figure to set up on the books, and the other is what should be depreciated.

Q. What is the proper figure to set up on the books?

A. I have answered that. I would say if I were faced with the proposition of determining what would be the proper figure to set up on the books, I should have to make some study of the facts and figures in the instant case; I would have to make a study of the situation as it has arisen there; then go to Washington and come back and set up the figures. I would not attempt to do that offhand; I could under ordinary conditions claim to be an expert accountant; so could you claim to be an expert attorney——

Q. No, no.

A. But if you had a problem in patent law that was a specialty, you would go to somebody that understood patent law. Here is a problem that is not an easy one. I would

go to a person competent to solve that problem. That is why we send Mr. Van Zant around.

Q. Don't you expect Mr. Van Zant to be here to tell us how he did make this set-up in Canton?

A. He will be willing to tell you. The books of the Ohio [fol. 9223] Bell Company must show that. You could not put that property on the books without exposing all of the facts in connection with it.

Q. Do you know whether they have shown that here?

A. I don't know anything about the case, other than I have come here to tell you people something about depreciation.

Q. I understand that, and I do not want to carry you on beyond that which you claim to be competent to testify about. But you say you would take the agreement, the consolidation agreement; you would take the books of the two companies, and that you would go over them, or rather you say Mr. Van Sant would do that, and then he would arrive at some figure and go down to Washington?

A. He would arrive at some tentative conclusion of principle.

Q. I believe you have qualified as an expert to the extent you could tell us what are the elements he should consider, and what are the elements that this Commission should consider in determining that very question as far as it applies to the Canton area. It is not arbitrary, is it?

A. No, it cannot be arbitrary.

Q. It has to have some foundation in reason, doesn't it?

A. Yes, sir.

Q. I have supplied you three figures, which are certainly pertinent facts to be considered, aren't they? They are values, aren't they?

A. Well, as long as you treat them as values they have only an indirect bearing on this proposition.

Q. Call them cost figures. You have those three figures [fol. 9224] for the sake of the hypothesis. You say you cannot answer it. It would not be any of the three. It might be something less or more, whatever might be determined on in conjunction with the Interstate Commerce Commission?

A. I don't know that. It might be that he would decide to use one of those three amounts. You say there are no specific instructions in the uniform system of accounts covering mergers as such. There are explicit directions cov-

ering sales and purchases of property. I know in a merger in a general way the idea is to take the fixed capital accounts from the books of the two companies and consolidate them, but how that would arise in a particular merger I do not know.

Q. There is nothing mysterious about a merger. A merger does not add to or detract from the values or the original cost. They are the same, whether you buy for yourself new or whether you buy from another company already used. The original cost is unchanged whether you call it a merger or a sale.

A. The original cost is a fact, and the values would remain the same if you threw all of the books in the river. This is a question of correct accounting.

Q. No, it is not a question of what would be the correct accounting at all. There is where you and I are off. It is a question of what would be the fair basis against which you should figure depreciation. What are you going to seek to keep intact, the million dollars, the million and a half or the two million? And you say you do not care to answer?

A. No, I have given you my answer on that and the only [fol. 9225] answer that can be given. The amount that should be covered by the depreciation charges is the amount which is reflected in the fixed capital accounts of the Ohio Bell covering this property.

Q. You won't say what elements should be considered in fixing that figure?

A. No, sir, not without knowing all of the details.

Q. What other details would you want?

A. I would want to take time to study the merger agreement.

Q. Why? What has the agreement got to do with it?

A. I would want to go back——

Q. Just a minute. You say you would want to go back. What has that to do with it?

A. I don't know.

Q. It hasn't a thing.

A. I don't know. It may have. It may have everything to do.

Q. It is simply the creation of the condition; it might be arbitrary, might it not?

A. You cannot make bricks without straw. If you want to have an accountant set up your books you must supply him the material.

Q. On the other hand any agreement which the Ohio Bell and the Ohio State might enter into in which they sought to determine values would not determine values; as you said before value is a fact?

A. Value is a fact.

Q. And the agreement would not materially assist in determining value?

A. Not as to value.

Q. That is what you are dealing with?

A. No.

Q. Costs?

A. Costs and value are not the same.

[fol. 9226] Q. I abuse the use of the terms. Cost is a fact.

A. Cost is the fact, yes.

Q. An agreement would not determine that?

A. I don't know whether it would or not.

Q. I mean any agreement the Ohio State and the Ohio Bell entered into——

A. If I were going to account for this merger I certainly would not proceed with the accounting without the agreement, without knowing what it did contain.

Q. Any agreement that the Ohio Bell and the Ohio State could not determine the cost to the Ohio State, could it? It could only determine the cost of the Ohio Bell?

A. It could affect the cost to the Ohio State?

Q. It could actually fix it as the Ohio Bell, but could not change in any way the cost of it to the Ohio State?

A. Absolutely, no.

Q. You would not really be concerned in the agreement, would you?

A. I don't know.

Q. All right. The agreement could not fix the actual value of the property, could it?

A. It might attempt it.

Q. It is an arbitrary creation, isn't it? Two parties get together and say, "I will sell," and "I will buy." That does not fix values?

A. It might fix the value as between those two people, but it would not fix the general value.

Q. Assuming that it is a utility, it would not fix it for the use of this Commission or for the sake of the rate paying public?

A. These questions are not accounting questions, I submit, and you are dragging me all over the lot here, and I

[fol. 9227] am not quite sure where I am going, and I do not want to fence with you, but I cannot turn accounting into anything else but accounting.

Q. I do not want to be discourteous. We, too, have been dragged over the lot.

A. You are not discourteous. But I do not want to appear to be fencing with you. If I had an answer it would come like a shot.

And thereupon a recess was had until 1:30 o'clock P. M. of same day. (Friday, April 25th, 1924.)

[fol. 9228] Friday Afternoon Session

April 25, 1924.

And also A. B. Crunden, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. Kinnison:

Commissioner Poor: Before we start in for the afternoon, shall we decide when to take up this again?

Mr. Dotson: The week of the 12th has time open.

Commissioner Poor: The week of the 12th, the first two days of the week are open only.

Mr. Dotson: Monday and Tuesday.

Mr. Burr: What about next week?

Commissioner Poor: Next week you have the Barberton and Akron valuation protest the first two days, and the rest of the Commission calendar is pretty full there. Let us have this in the record. At this time it is agreed that at the adjournment today the matter will be continued until Monday, May 12th, at 1:30 o'clock P. M., reserving of that week the 12th and 13th, and then looking forward to the reserving of May 19th and 20th, and May 26th, 27th, 28th, and 29th, all contingent upon what progress we are making in the matter.

Mr. Shuler: Have you any further evidence?

Mr. Burr: We may have two witnesses. I am not sure. [fol. 9228½] We may have none.

Mr. Shuler: If the Commission please, I understand these days are set aside for the closing of our cross-examination of Mr. Burr's witnesses?

Commissioner Poor: Well, we do not specify as to what

shall take place, but there is that space of time available to hear this case, whether it is cross-examination or otherwise. When you get through with that we will go into the next stage.

Mr. Shuler: I do not want to be caught in the position, as far as I am concerned—is it the understanding of the Commission, if we get through with the cross-examination on the first two days, we are to go ahead with any evidence we have to offer?

Commissioner Maullar: There may be some redirect.

Mr. Shuler: I do not want to be put in the position where the Commission will say, "We understood Mr. Shuler and the others to say 'We will go on' ".

Commissioner Poor: We want to make just as much progress in this case as we can and take the successive stages as we reach them. This Commission cannot tell whether we will be through with the cross-examination. You lawyers know more about it than we do. If you get through with your cross-examination and then if the next stage is up to you, to produce your testimony, you ought to be prepared to do that.

Mr. Shuler: That is the point we want to get the expression of the Commission on. That is why I asked the [fol. 9229] question.

By Mr. Kinnison:

Q. Mr. Crunden, in offering your testimony in this case, do I understand that the purpose of your testimony was to show the value of the services rendered by that particular branch of the A. T. & T. with which you are connected to The Ohio Bell Telephone Company?

A. Why, I was not consulted regarding the object of the testimony. I take it it is that, at least in part.

Q. You were not consulted concerning the object of it?

A. No, I was simply asked to come out here to describe my work and to describe the method of accounting that I had advocated at Washington—that and various other things upon which I touched.

Q. You do not feel that you have offered yourself as an expert other than for the purpose of testifying concerning the system of accounting which you say you advocated at Washington and within the organization of the A. T. & T.?

A. I am willing to offer myself as an expert to any ex-

tent that I can help any of you gentlemen. And I have told you what my qualifications are. I do not understand the exact import of your question.

Q. I understood you to say this morning, in answer to a question of mine, that you pretended to be well-informed concerning your system of accounting approved by The Interstate Commerce Commission?

A. Yes, sir.

Q. But you went no further than that in attempting to interpret it in the practical affairs of the Company, hav- [fol. 9230] ing in mind the question I asked this morning?

A. I think I can interpret its practical application.

Q. You think you can?

A. Oh, yes.

Q. What did you mean this morning when you said that you limited your degree of competency on the stand by saying that you spoke purely as an accountant?

A. I mean the application of my accounting experince and knowledge to the practical affairs of the company.

Q. In your testimony wherein you have spoken of depreciation you have considered it purely as a problem of accounting, have you not?

A. Yes, I think that is true. Primarily so, at any rate. It may have ramifications but I have been speaking primarily of the accounting aspect of depreciation.

Q. In your testimony I presume, since we were somewhat at cross-purposes this morning, you had in mind, when you testified that depreciation was set up against both costs—you did not have in mind any possible rate base which might be set up by this Commission respecting the value of the property at all, did you?

A. No, sir.

Q. Have you ever considered the relation between the book values of your Company—I refer to The Ohio Bell Telephone Company—which they set up for the purpose of depreciation and the base rate which this Commission may establish as making available more funds or less funds for dividend payments?

(Question read.)

Q. Is my question rather ambiguous to you?

[fol. 9231] A. It is a little. I think I know what you mean, but I am not sure.

Q. All right. Allow me to phrase it a little differently. Assuming that you carry upon the books of your company that cost statement of which you spoke this morning, going back to this hypothetical question which I raised this morning, of a million and a half dollars, as a problem in accounting, you would depreciate against that value, wouldn't you?

A. That being the value on the books, yes.

Q. That being the value on the books; we might assume, on the other hand, that this Commission might place a value of two million dollars on that property; the Commission and the uniform rules of accounting would allow you to hold for your depreciation reserve a fixed percentage of two million rather than a fixed percentage of the million and a half?

A. Upon the books?

Q. No, I would not say upon the books.

A. Now when we talk about the one million and a half and say that that is the value for the purpose of treating depreciation on the books, of course we mean it is the book cost, which is not value in the same sense as the two million dollars found by the Commission would be value.

Q. I comprehend that.

A. Now the fact that the Commission found two million dollars as the value of property which was carried on the books, the fact that the Commission found $2,000,000.00 as the value of the property carried on the books at $1,500,000.00, would not change the books in any way, nor would [fol. 9232] it change the amount of the accounting for depreciation expense on the books.

Q. I still have not presented what I have in mind I see. I am going to say that you carry on your books that value of $1,500,000.00; you are going to depreciate against it, and you set aside, on the basis of five per cent, $75,000.00 annually, wouldn't you?

A. Yes, sir.

Q. Which would be a credit to your depreciation reserve, wouldn't it?

A. That is correct.

Q. The Commission, on the other hand, has determined upon a valuation of $2,000,000.00 as a fair rate basis; upon the same basis of five per cent it would mean you were allowed to set aside to your depreciation reserve $100,000.00,

wouldn't it? I mean in determining that which constitutes a fair return upon the values which the Commission finds?

A. That might be used by the Commission in arriving at what they consider a fair rate to cover expenses and the necessary return, but we would not make charges on that basis on the books.

Q. I understand that. If you will just give me a little time here——

A. Yes.

Q. Here is what I mean to get at, Mr. Crunden. In determining what constitutes a fair return upon the value which this Commission may determine upon, it takes out your items of expense, it allows you depreciation, etc., including all of the charges which may legitimately be made against gross revenue to determine what is net, and in so doing it allows you to depreciate a property which we will say is valued at $2,000,000.00 upon the basis of five per [fol. 9233] cent, and you are then able to charge $100,000.00 to your depreciation reserve, aren't you—or credit, rather?

A. No, that would not change the bookkeeping.

Q. I am not speaking of your bookkeeping. Upon the figures which I have supplied you, $100,000.00 would be entitled to go into depreciation reserve, wouldn't it, because you will depreciate actually for the purpose of a rate case upon the value determined upon by the Commission rather than your books?

A. No, sir, you depreciate according to your books.

Q. For the sake of your books you will.

A. Yes, for the sake of the books. It would not matter what the Commission did, you would still stick to the $75,000.00 per annum. If they allowed none whatever you would have to do that.

Q. The Commission is going to allow five per cent depreciation and the Commission is going to find the value of the property involved is $2,000,000.00; five per cent of that is $100,000.00?

A. Yes, sir.

Q. And that sum of money, of $100,000.00, is entitled to be deducted from your gross income in determining what is net, isn't it, for the purpose of the rate?

A. In the rate case statement?

Q. Yes; is that so?

A. Yes, sir.

Q. On your books, however, you have property listed at a valuation of $1,500,000.00; you are also depreciating on the five per cent basis for the sake of your books, which will give you $75,000.00?

A. Yes, sir.

[fol. 9234] Q. There is a difference there some place of $25,000.00 which has been added as the item which the Telephone Company is entitled to withhold in determining what constitutes a fair return on the rate base, isn't that so?

A. On the assumption that it has, yes.

Q. What actually happens to that $25,000.00?

A. Let us take the next succeeding year and say the conditions turn out exactly the way you expected them to.

Q. No, if you will pardon me, if you will allow me to limit you, just take that one year.

A. You are asking me what would happen. I must go ahead.

Q. I do not think it calls for assumptions. I am interested in that one item of $25,000.00.

A. Will you state your question again, because I thought you asked me to predict what would happen. We are here at a given moment of time, where this arrangement is arrived at, and we look to the next ensuing period.

(Question read.)

A. That depends upon what happens in the next ensuing period. If the expenses are greater in the next ensuing period there may not be any $25,000.00. There may be less, there may be more, than $25,000.00.

Commissioner Poor: He means, where do you put that $25,000.00 on your books; it goes in surplus account or is available for dividends?

The Witness: It does if it eventuates.

Q. It has eventuated. I have assumed it has.

A. I started out to premise that that is what happened. [fol. 9235] You interrupted me. I was going to start backwards perhaps from your point of view and say that in the next ensuing period the Company actually gets the $25,000.00. You wanted to find out what happened to the $25,000.00 if they got it?

Q. I want to know what happened during that current

period for which that depreciation is available under the premise I have stated?

A. If the Company in the next ensuing period——

Q. No, I want that period.

A. That is the period. That is the period which begins this. I will call it present period. We must start at the beginning of the period to look at the period. Now if there proves to be $25,000.00 net revenue over and above what is required to take care of the current expenses and admit a charge of $75,000.00 for the accruing depreciation, the balance would constitute the net income of the Company.

Q. Now do you speak of that $25,000.00 as being net revenue?

A. Yes.

Q. It becomes available for dividends then?

A. Yes, it would under that condition certainly.

Q. Under your uniform system of accounts I believe you are compelled to charge off the depreciation rate as against the amount that you carry upon your books, is that not so, in determining whether there is anything left net available for dividends?

A. That is correct.

Q. If the base which is established by the Commission is in excess of that which you carry on your books, your former answer then means that you will have ordinarily [fol. 9236] more money available for dividends than you would if the amount which you carry on the books and the amount which is determined upon by the Commission are the same from an accounting viewpoint?

A. If everything turns out as was given in the illustration, yes, certainly.

Q. And ordinarily it would be to the interests of the Telephone Company to carry book value less than the base which might be established by the Commission, isn't that so? Otherwise, wouldn't you be hampered in the payment of dividends?

A. No, I cannot say that that would have any bearing on it. I do not think that follows.

Q. You have just answered, haven't you, that the difference between the two would be available for dividend purposes?

A. Yes, but I cannot see that there is any connection there, and there is no proof, to my mind, that the amount

that the Commission would find for what you call the rate base would always be in excess of the books.

Q. I understand that, but I have given you a particular instance where it is, and I have premised my question on that basis.

A. The question is, assuming that the rate base would always be in excess of the amount carried on the books, that it would be to the advantage of the Company, if that was so?

Q. Yes, for the purpose of being able to pay dividends, no matter how small?

A. Yes, that would be the case.

Q. That is to say, that for your net income available for dividends, when the Commission had set up a base of [fol. 9237] $2,000,000.00 and on your books was a million and a half, that $25,000.00 might possibly be the only amount which would be available for dividends; is that not so?

A. Yes, it might be.

Q. Then it is to your advantage ordinarily for the purpose of being able to retain credit for regularly paying your dividends, at least some dividend, although variance continually exist-; is that not so?

A. We are getting now from an accounting question over to a sort of a quasi-legal, quasi-economic question. Now there are other points to it than those to which you are confining your attention, it seems to me. The situation to which you have referred could only come about because of general increases in the value of property which raised the value of this particular property after the time that it had been placed in service. That is, the time it was purchased presumably its value would be what it cost. At some later date, while the property is in service, after a lapse of years, the Commission places a value on that property higher than the cost. That is one of our assumptions?

Q. Yes.

A. There is a piece of property developed for public use which is worth more than what it cost you. Now that property is worn out in operation and the time comes when it is necessary to replace it. At that time the Company will have provided, by charges to expense, an amount equivalent to the loss of the cost of that property, but it will not

have made charges equal to the value of that property, and yet it must then substitute a new item which has that [fol. 9238] increased value. Now where is it going to get the difference? You see what I mean?

Q. That is to say, if the Company continually uses that $25,000.00 for dividend purposes it will finally come to the point when it cannot keep its property intact?

A. Well, if this item of property were a pole which cost $10.00——

Q. Just answer the question, if you will.

(Question read.)

A. It could keep its property intact by spending enough money to keep the property intact.

Q. Where would it get that money?

A. What I mean is, here is a pole which, at the time of the rate case, we will say, is valued at $12.00, and the charges for depreciation through the life of that pole have been equivalent to $10.00. Now the pole is worn out. The Company's pole is gone, and it has to provide, we will say, a new pole which again cost $12.00, and it would then have to go into its pocket to get that other $2.00. The question is whether you are talking about the replacement of the dollars or the replacement of the pole. From the accounting viewpoint the question is confined solely to the replacement of the $10.00, because books are always kept on the basis of cost.

Now we are getting around to the proposition where that pole is admittedly worth $10.00 and it is consumed in operations. At the end of the useful life of the pole $10.00 has been charged on the books which has operated to retain in the business $10.00. But is there elsewhere in [fol. 9239] the undertaking, say through surplus, the other two, or is it necessary then to go out into the investment market and attract in two dollars more to cover the increased cost of the new pole, although there wont be any greater quantity of plant provided for the use of the same number of subscribers?

Now that is not an accounting question. That is a question of whether in a case of this sort we ought to consider the question of replacing the pole with a pole, or whether we ought to consider the replacing of the dollars. Now if that is the same question we were trying to debate this

morning, I can see where we were confused, because I was confining my attention to the accounting.

Q. No, Mr. Crunden, where would you get that additional two dollars you speak of; out of capital?

A. You could get it in two ways. One way would be if the returns during the life of that pole had been sufficient to enable you to retain in the undertaking $12.00, not necessarily by depreciation, but some way, partly depreciation, we will say, and partly surplus, then you would have the $12.00 working capital by the aid of which you could get the new pole. If you had failed to do that to any degree, to that degree you would have to issue additional capital stock.

Q. If you issued capital stock for that $2.00 it would mean that your stockholders had received that $2.00 in dividends and to replace it to your capital account you would have a corresponding capital account of $2.00?

A. It would mean that if you had disbursed that $2.00. [fol. 9240] Q. Then you would have to go out and borrow it or invest new capital, and in that particular case it would show a corresponding liability and the dividend in the mean time would have been paid?

A. It would, assuming it would have been paid. You can see from my standpoint it may not have been paid.

Q. It is available for dividends, and I am assuming in the discretion of the board of directors that they have declared them.

A. Yes, but if, in addition to the fair return, there is only enough to take care of the original ten dollar pole, then of course this other two dollars could not have been paid in dividends.

Q. As a book proposition it is available, and under the uniform rules of accounting it is available at the discretion of the board of directors?

A. The uniform rules of accounting would not have anything to do with that. This is a proposition whether there is enough in the surplus or elsewhere to take care of that two dollars. That is always a matter of fact. You are assuming it is there. That is a perfectly legitimate assumption. I am pointing out it might not be there. That is also perfectly legitimate.

Q. Assuming this $25,000.00 was continually paid, it might finally impoverish the Company, might it not; that

is to say, they were depreciating against a book value when the actual value was in excess of that, and when it came time that they finally had to replace the physical property they would not have the money to do it, would they?

[fol. 9241] A. That would depend upon conditions. I do not think you can draw that conclusion.

Q. You cannot draw that?

A. No; that is a practical proposition, depending on circumstances.

Mr. Shuler: I just want to put into a concrete example this very thing, because I think it is fair to put a hard case to test any kind of a principle. Now I do not hesitate to tell you in the first place why I put the question. My proposition is that by depreciating on your books at five per cent of the book cost, during a period of rising prices the Company does not take out of earnings sufficient to replace the property. That is my first proposition.

Mr. Burr: It does not take out of earnings or get out of earnings enough?

Mr. Shuler: Take or get.

Mr. Kinnison: Or reserve from earnings—withhold.

Mr. Shuler: That in the case Mr. Kinnison had, where a property is valued in excess of its book cost, the Company, Mr. Crundon, produces evidence before the Commission that the present-day value of the property is $2,000,000.00. That the proper annual charge is five per cent for depreciation. If the Commission believes that, they find that value, and, as I understand it, allow as an operating expense five per cent of $2,000,000.00, which is $100,000.00, annual charge for depreciation. Then they say "We will allow you six [fol. 9242] per cent on $2,000,000.00, which is the fair value of your property", and that adds $120,000.00 there. And for the purposes of this illustration——

Mr. Burr: To what do they add it?

Mr. Shuler: You must wait until I finish my proposition.

Mr. Burr: Excuse me.

Mr. Shuler: To that they add—and for the purposes of this illustration we will say that all other operating expenses are $100,000.00. Now I think I have taken care of all charges against the property. Am I right in saying that operating expenses, exclusive of annual depreciation charges, and annual depreciation charges are all the items of expense?

The Witness: You want my reply to that last question?

Mr. Shuler: Yes.

The Witness: Your operating expenses and fair return are all that are necessary to provide for——

Mr. Shuler: No, I say this, operating expenses, exclusive of the annual depreciation charge, and the annual depreciation charge are all the items of expense?

The Witness: Yes, sir, that is correct.

Mr. Shuler: Now, in this case there are operating expenses exclusive of annual depreciation charge of $100,000.00; the annual depreciation charge, being five per cent on a two million dollar valuation found by the Commission as a rate base, is $100,000.00; therefore the total operating [fol. 9243] expenses are $200,000.00. Now the Commission wants to give the Company a fair return on the fair value of its property and it finds that that fair return at six per cent is $120,000.00. Therefore they allow a rate to the utility which will produce a revenue of $320,000.00?

A. Yes, sir; that is, on the assumptions that you have made, that will produce not less than a fair return.

Q. Precisely so, nor more than a fair return?

A. Nor more than a fair return.

Mr. Burr: That is assuming that six per cent is a fair return.

Mr. Shuler: Oh, certainly, I am taking this only for the purpose of illustration and not for evidence or argument or anything like that.

Q. Now that is the Commission's side of the case, the accounting. The Company has actually received dollars from its rates during the year amounting to 320,000. The Company, the utility, has paid out in operating expenses, exclusive of the annual depreciation charge, $100,000.00. You, as an accountant, take out of those dollars 75,000, being five per cent of the book cost of $1,500,000.00. Now you, as the accountant, deduct from $320,000.00, total gross revenue, $100,000.00 operating expenses, exclusive of annual depreciation charges, and $75,000.00 annual depreciation charge, which leaves you $145,000.00 for dividends or any purpose the Company wishes to devote it to; is that correct?

A. Yes, sir.

Q. Now in this Company, just for the purpose of putting [fol. 9244] a hard question to test a principle, that goes on

for ten years. At the end of ten years, prices in the meantime having gone up, you have taken and credited to the Company five per cent of the book cost of the property ten years ago, but to replace the property will require more money today because prices have gone up; and having used up for dividends all the money that the Commission allowed you as an annual charge, being five per cent of $500,000.00 more than your book cost, the Commission allowing you five per cent of $2,000,000.00, your book cost being $1,500,000.00, you have paid out in dividends $25,000.00 a year more than you have put into your depreciation reserve or fund, while the Commission allowed you $100,000.00 to be used to take care of your property; now at that time you arrive at the situation you just spoke about; the pole cost $10.00, and the new pole costs $12.00. You have to get additional capital to buy the pole, and you said you could get this $2.00 to add to your capital by selling stock at $2.00 and it goes into plant new, and then doesn't it become a fixed charge, a fixed capital charge, in the future for rate making purposes—that $2.00 additional?

A. Well, on the assumption that we have been making, there would not be $2.00 additional as a capital charge because you have been getting a return of $12.00 right along.

Q. Yes, precisely so. The corporation has been getting it, but it would not use it to take care of the $2.00.

A. Because you only depreciate in your books at five per [fol. 9245] cent on the $10.00.

Q. And took the five per cent on the $2.00 for additional dividends?

A. In the assumption.

Q. Yes. Now I will admit if, instead of paying out each year as additional dividends that $25,000.00 which the Commission has allowed you as an annual depreciation charge, that $25,000.00 excess over what you actually put on your books, you had put that $25,000.00 in a surplus account and paid for the extra price of the pole out of that, nobody would have been harmed. Now isn't this true, that utilities frequently, as a matter of bookkeeping, do not credit up to the depreciation account the amount they are supposed to in order to make a showing of earnings that do not actually exist? Is that a clearly understood question?

A. I think there have been cases like that. I do not think you could accuse the Bell System of such practice, but I

think I could point my finger to corporations who have done that.

Q. You could put your finger on one Bell Company that has done it?

A. No, I don't think so.

Q. Don't you remember the Michigan case?

A. You are referring now to my Washington testimony, aren't you?

Q. Yes.

A. I do not feel that there is any opprobrium attaching to me or the Michigan Company with respect to what was done there, and I do not feel that the failure to comply with the Interstate Commerce Commission's instructions in that case was anything more than a technical proposition, be- [fol. 9246] cause there were numerous circumstances I could go into if it were pertinent which would show that I was entirely in the right in what I did.

Q. I don't want to cast any opprobrium on you.

A. Oh, I know that perfectly well. You know I bared that case pretty frankly at Washington.

Q. I want to get it clearly in my mind again. Book cost as shown on the books of the Telephone Company, the Bell Telephone Company—does book cost mean original purchase price?

A. Generally speaking it means that. That is, to the corporation that takes the property on the books.

Q. Yes, but I am talking about any Bell Associated Company. Would its book cost reflect the actual original purchase price?

A. Of purchased property?

Q. Yes.

A. Yes, its fixed capital accounts would include that amount unless the price paid for some other going and completed telephone property were in excess of the appraised structural value of such property at the time of purchase.

Q. No, I am not speaking of a merger. Let us get away from consolidation.

A. All right. But this is talking about a constructed plant.

Q. Yes, a constructed plant.

A. The amount placed upon the books in the fixed capital account would be the actual amount incurred in that.

Q. And as purchases are made they are put into the books at that price?

A. Yes, purchases of material for constructing plant.

[fol. 9247] Q. Yes, and equipment; that is the reason I am pretty careful, and want to be careful. You seem to say constructed plant. I want to know whether or not that is true of equipment?

A. Yes.

Q. Somehow I have obtained the impression that every year or two, due to removals, property may go into the fixed capital account at a price prevailing at that time, and if the prevailing price at that time is higher than the original cost it goes in at that original price?

A. The explanation of that is this, that as to a certain amount of telephone material there is a re-use. The re-usable property is almost entirely station apparatus, with a very small amount of plant of all other classes; so that it is principally a proposition of station apparatus. Now, station apparatus, when it is taken out of plant, is returned to the storeroom and its parts are taken down. The equipment is unassembled or disassembled and the various parts are placed in different bins preparatory to going through a process of repair and renovation. Many of those parts are found in a position where they must be junked and others are refinished and come out as good as new, where they are, in fact, undistinguishable from new. Now from time to time these parts are taken out of this bin where old and renovated parts are commingled, and assembled into instruments which are for all practical purposes new instruments. It is impossible to tell from the examination of an instrument whether it is partly used. And because of our inability to individualize those items for the time, because of [fol. 9248] their physical condition, and because of the great number, which would render the accounting burdensome, we treat all items at the corresponding price of the item used.

Q. Is the same thing true of poles and wires?

A. But to a limited extent, because poles and wires are not used anything like the extent stations are. It is a negligible proposition as far as poles are concerned. Many poles taken out of plant are fit for re-use, but they are cut off and shortened and we wipe off the difference in the valuation of the pole.

Q. Then the books of the Bell Companies do not precisely

or exactly reflect the original cost of the property in plant?

A. No, there is that exception which is allowed in the system of accounts, which is that you shall put in this reusable material at its second value; it does not say you must perpetuate an original cost where on the obvious face of things it is impossible to do it.

Q. Then if in a rate case the Court has held that original cost is an element to be considered, to the extent that you have explained the books of the Bell Company would not reflect the original cost?

A. Theoretically they would not, but neither would they reflect it with regard to other property, such, for example, as purchased property where we had placed upon our books less than the original cost. Furthermore, it is impossible to perpetuate exactly the original cost because of the innumerable petty retirements which must be treated on averages, [fol. 9249] and the point that you make would, in practice, be an entirely technical one and would have no substantial practical bearing on the matter.

Q. You have answered it, Mr. Crundon.

A. We get it as near as it is humanly possible to get it. I do not want to leave a false impression. I do not want you to think our books are substantially off original cost. They are so near original cost that you cannot tell which way the error lies.

By Mr. Kinnison:

Q. Mr. Crundon, going back to my question this morning, when certain properties were merged into the Ohio Bell, the old Ohio State property being one of them, assuming that the Ohio State property was in quite a depreciated condition when that merger occurred, what would you do in the matter of accounting and attempting to restore that property upon your books to take care of the depreciation accrued when you did not take over any depreciation reserve?

A. In the ordinary merger, as far as my information goes, we would simply combine the two sets of books; that is, we would take the plant accounts and add them together and take the reserves and add them together.

Q. That is, assuming you took over the reserves of the Ohio State, your answer is yes?

Mr. Burr: May I ask a question while you are waiting there, apropos of Mr. Kinnison's questions to you at the

morning session, and particularly with reference to what you would do, what you said you would do in setting up a [fol. 9250] book figure for the proposed property as the result of a merger or a consolidation; isn't that true——

Mr. Kinnison: We object to that form of question. Let him tell what he would do.

Mr. Burr: Take out that, then. You said, I believe that if you were going to set up a book figure for the property of the Ohio Bell Company as a result of the consolidation between the old Ohio Bell Company and the Ohio State Company you would consult with the Interstate Commerce Commission on the subject; that is correct, isn't it?

The Witness: Yes, if the proposition involved anything more than the most obvious accounting.

Mr. Burr: Now, has the Interstate Commerce Commission issued instructions to the telephone companies as to how properties purchased, not acquired by consolidation but purchased, by a given telephone company would be placed on the purchasing company's books?

The Witness: Yes, sir.

Mr. Burr: Have they given any instructions, so far as you know, general instructions, as to how that shall be done in the case of a consolidation?

The Witness: Not to my knowledge, no.

Recross-examination.

By Mr. Dotson:

Q. I would like to ask, Mr. Crundon, if additions and [fol. 9251] withdrawals from the depreciation account yearly are equal, the depreciation reserve would remain a constant quantity, would it not?

A. Yes, sir.

Q. Referring to your Exhibit No. 21, you have a curve of realized depreciation in connection with your annual expense of depreciation curve for the condition of the plant remaining stationary; then the amount below the six per cent line and above the curve of realized depreciation would just equal depreciation reserve, wouldn't it?

A. You mean it would equal the addition to the reserve in respect to years. You see this is the proposition that shows the annual percentage illustrated by curves.

(Question read.)

A. Well, this chart shows the amount for the respectively individual years. This is not a chart that covers the accumulated depreciation reserve. For instance, there is six per cent for the static plant and there is annual realized depreciation of five per cent when the plant grows five per cent per year in this illustration. So the difference between the two illustrates the difference in the annual percentage and not in an accumulated reserve.

Q. Let us look at it this way then. Taking those lines as they appear in this chart, the sum of all of your credits to the depreciation reserve is the total area under the six per cent line up to and including the year under consideration, is it not?

A. I think that I will give you an answer that is roughly correct if I say yes. But of course you understand that [fol. 9252] those percentages are applied on the plant of the respective years, so that they are moving percentages. With that proviso, that is all right.

Q. Take any year that appears at the bottom of your exhibit, drawing a straight line up to the six per cent you have got the result I spoke of?

A. Yes, sir.

Q. For that year?

A. Yes, sir.

Q. Then your withdrawals or debits to the depreciation account is the area under the curve of realized depreciation up to and including the year under consideration, isn't that true?

A. You mean cumulatively.

Q. Yes.

A. Well, that is a false way of looking at it, because of the variation in percentages.

You have a moving base, namely your plant account, and five per cent of the plant account in one year would be different from what it was in another year, so you cannot talk about areas in this chart. You can only talk about lines, lines either horizontally or vertically.

Q. Those lines represent a constant condition based upon the elements considered in making them, as I understand, after they strike a direct level. Now, isn't it true then that the difference of these areas equals the balance in the depreciation account at the time under consideration, any time you select?

A. Well, I can only answer that by saying that such areas would reflect such amounts providing that this chart were based cumulatively on dollars instead of on annual percentages, and then it would reflect an area in dollars for the exact time you speak of.

[fol. 9253] Q. That is what I mean.

A. I am objecting to the use of a ratio chart for the purpose of making an illustration that is based on cumulative quantities. That is all. It is just a technical point.

Mr. Dotson: That is all.

Cross-examination.

By Mr. McConnaughey:

Q. On Page 594 you are describing the book entries with reference to depreciation. I should say 595, at the top of the page: "The reserve for depreciation account is carried on the liability side of the balance sheet. When the automobile is retired you offset those two items, that is, you credit the plant account and debit the reserve account. That results in cancelling the whole transaction out of the balance sheet."

A. "Just as though it never existed."

Q. And on the preceding page, commencing at the bottom of 593, you say: "At the end of a certain length of time the item of property or the class of property to which the debits and credits have related will be retired from service and at that time the amount at which such items stand charged to the plant account should be credited to that account, the salvage should be charged to the supplies account or to the person who receives the salvage, and the balance, representing the loss, should be placed in the reserve account and offset against the reserve, and it is finally wiped [fol. 9254] out, and therefore all recognition of the depreciable unit or item of property disappears from the books." Now it seems to me that the item of salvage is still in that depreciation account, according to that statement, although you say that the depreciation item is entirely wiped out with reference to that particular unit. What is your explanation of that?

A. Well, what happens is this; let us assume that the proportion of the property that is consumed in operation is 60 per cent of the total, and that the salvage is 40 per cent. Now the amount to be written off is 100 per cent. In

practice we credit the plant and charge reserve with 100 per cent. That is an incomplete transaction so far. We credit the reserve with the salvage of 40 per cent and debit the person who receives the salvage. That leaves 60 per cent in the reserve. The reserve has in that way been used as a sort of wash account to wash the salvage off as against that part of the original cost which is not consumed in operations. In that way we have brought down the 60 per cent, which is the consumable outlay, and that is extinguished against the 60 per cent credit balance, which has been raised in respect to that item, and if that was the only item involved in the reserve for depreciation, the reserve for depreciation would be wiped off of the books.

To clear you up, Mr. McConnaughy, a little bit in regard to our practice in that respect, we could equally well keep the salvage out of the reserve account entirely. It is purely an accounting mechanism for convenience that we ever let [fol. 9255] it get in there. We could do it more simply, and, from the standpoint of the layman, more rationally, by consuming the reserve credits equal to 60 per cent, and when we wipe off the 100 per cent entry charge the 60 per cent against this item in reserve and charge the 40 per cent against the person who receives the salvage or the storehouse. That would give you the same final accounting result.

Q. I do not get from your statement just when you get rid of this 40 per cent in the depreciation account.

A. Why, you get rid of it at the time that you make the entry which credits plant and charges reserve.

Q. That is, you charge 100 per cent at that time?

A. Against the reserve. We charge the reserve with 40 per cent more than is set up to take care of it, but we only do it that way as an accounting convenience.

Q. That is, you assume and try to so plan that the depreciation reserve only includes the amount of the property, less the salvage, to start with?

A. Yes, sir.

Recross-examination.

By Mr. Shuler.

Q. Now, Mr. Crunden, I want to ask you just one more question, I think. You were asked this question on page 628: "Is it the theory of the true depreciation that you seek to

amortize the loss of your original investment?" And you answered: "Yes." On Page 636 you were asked this question, at the bottom of the page: "Your method is the proper [fol. 9256] method of depreciation to keep the investment intact, is it not?" Your answer was: "Yes, sir. By investment I assume you mean there the book cost of the property?" I said "Right." Now, also, depreciation, you say, is returning to the company the loss by use of its property; isn't that right?

A. From the accounting standpoint it is the cost of property consumed in operation—just exactly what is meant by those two quotations.

Q. Now, if that is the true rule of depreciation, why should ever any depreciation be allowed on any other sum than the book account? That is, in fixing an annual charge for depreciation, why should the rate of depreciation be based on any other sum than the book cost?

A. Well, for purposes of bookkeeping, it should not.

Q. Why should it in a rate case, or can you give us any idea of why it should be in a rate case?

A. Well, as I said a little while ago, I think that is a quasi-legal, quasi-economical proposition and it goes back to this proposition——

Q. Let me just——

Mr. Burr: Let him go ahead.

Mr. Shuler: I was going to ask him a question and I think he could explain both.

The Witness: There is a good deal to be said on both sides of the question.

Q. I was going to put another question to you so that you might elaborate the whole thing at once. Supposing the Commission should find the value of the property less than the [fol. 9257] book cost as a rate base; you would still have to charge in your books five per cent of the book cost, wouldn't you?

A. Certainly.

Q. And if it allows you a depreciation on a greater amount than your book account, you only put into the depreciation reserve the five per cent on the book cost?

A. That is correct.

Mr. Shuler: That is all.

Mr. Burr: Do you know whether or not The Ohio Bell

Telephone Company's books are kept in such a way as to show the book cost of the Ohio property by exchanges?

The Witness: My opinion is that they are not, but I cannot state positively.

Mr. Shuler: It is, as a matter of fact, as to Cleveland?

Mr. Burr: It is not.

Mr. Shuler: In Cleveland you keep it separate, the Cleveland exchange.

By Mr. Kinnison:

Q. Do you know from what revenues you have the money available for the purchasing of patents, that is, the A. T. & T.?

A. No, sir.

Q. You do not know from what funds that comes?

A. No, sir.

Q. You do not know what proportions it runs into?

A. No.

Q. You do not know what values the A. T. & T. sets upon them upon their own books?

A. No, sir.

Mr. Kinnison: That is all.

[fol. 9258] And also ARCHIBALD J. ALLEN, recalled as a witness for the purposes of cross examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

Q. Mr. Allen, have you your Exhibits here, copies of them?

A. No, I have not.

Q. Have you a copy of your Exhibit No. 1, the photograph of the exchange?

A. Yes, sir.

Q. Now, referring to your Exhibit No. 1, this is a photograph of an A switchboard, with subscribers' answering jacks, out trunk multiple and subscribers' multiple; on the upright style strips which you describe as numbers designating the multiple, the highest number is 79, is it not?

A. I think so, yes.

Q. State what the total number of lines is that can be called directly from that switchboard?

A. The total number of lines are the lines from zero to 7900 or 7,999.

Q. That is the capacity of the board then, is it?

A. That is the capacity of this board as laid out, yes sir.

Q. Now, there are some blank strips above the multiple jacks in each panel; could those be filled with additional jacks?

A. Yes, they could be filled with additional jacks.

Q. How many more do you have?

A. About three more, possibly two more rows of hundreds.

Q. About three hundred then?

A. No, it is an A panel.

[fol. 9259] Q. 2400 then?

A. Yes, sir, approximately.

Q. Then the out trunk multiple jacks are located where?

A. They are located in the face of this switchboard just above the answering jacks.

Q. Is that space filled as the board is laid out?

A. It is filled but not completely in use.

Q. Could there be any additional multiple added in there?

A. Additional trunks can be put in use in this board as laid out, and when all of the trunks in this board were used up, the additional out trunk multiple could be installed, removing the lower strip of subscribers' multiple.

Q. Couldn't subscribers' multiple also be put in place of those out trunk multiples?

A. Certainly. If you do not have to have that out trunk multiple and your answering jack space at the bottom remain the same as it is in this Board, which by the way, would not be true; if this was a board which had no trunking, you would need more space for the answering jacks, and it would not follow that by removing these trunks you would necessarily lower your subscribers' multiple. You might have to raise your answering jacks.

Q. Then the total maximum capacity of that Board to which it might be increased would be about how many?

A. Well, that, Mr. McConnaughey, would depend on the calling rates, which would——

Q. I am speaking of the capacity of the board, the physical capacity of the board, leaving out the trunking altogether.

[fol. 9260] A. Well, as a very general proposition, a traffic engineer would have to have the basic data as to trunking and various features of that kind.

Q. Leaving out trunking?

A. Physically we could add two more strips. Whether it would be economical to do it would have to be studied.

Q. But you do think that that board might be increased to a total of 2400 in addition to the 7,999 that are now there?

A. Yes, it might not be economical to do it but physically they could be put in there.

Q. That would depend upon a number of conditions that we are not now taking into consideration; just the capacity of the board we are now talking about. Completing calls in an A board as compared with trunking to a B board is distinctly economical, is it not?

A. It takes less operating expense.

Q. In about what ratio?

A. The work on the call at the local multiple assumed to be a unit of one, the call at the trunk would be 1.5.

Q. Where is the saving, on the A board or on the B board?

A. The saving on a call would be both at the A and B board.

Q. How would you divide it between the two, that is, what would be the saving on the B board?

A. We would have to have traffic data in order to determine that, that is, the B load would be determined on the basis of the number of incoming calls from the various offices. The exact amount of work in handling B calls varies [fol. 9261] according to certain traffic conditions, number of incoming offices on the B board, so that it could not be answered as a general matter.

Q. What determines whether a B board should be supplied in a given instance?

A. The general fundamental plan conditions of the city or its geographical lay-out. There are many factors that would have to be considered by the engineers in deciding whether or not there should be more than one office in the city.

Q. Well, what does the multiple jack limit have to do with it?

A. Well, when we get more lines than could be handled in the multiple jacks of one board, we would then necessarily be driven to the proposition of trunking calls. That is one element that would lead to trunking.

Q. What is the limit that would be handled on one multiple board?

A. That would depend on the calling rate, which would, as I have said before, show us how much space we would have to use for answering jacks, which would be primarily—we must have the answering jacks. The space left after that can

be used for other purposes, completing calls or trunking, depending upon what the conditions are.

Q. Assuming a calling rate of ten for an average—what do you mean by the calling rate?

A. The calling rate is used in various ways. Calling rates are used for various purposes. We have a calling rate per station, a calling rate per line, various things. It means generally the number of originating calls from either a given [fol. 9262] number of stations or a given number of lines.

Q. Now, what calling rate do you have in mind when you use the words as you have just now?

A. I haven't any. I am open to any suggestions.

Q. Is it a calling rate per line or a calling rate per station?

A. In engineering a board ordinarily the calling rate per line during the busy hour of the day.

Q. Assuming a calling rate of ten per line?

A. That is an engineering study on which no traffic engineer would give you an offhand answer. It is a matter of considerable engineering to lay out a switchboard. I would not attempt offhand to state. I will give you a general answer, but I would not want you to take an offhand answer. But I would assume that we would use up something in the neighborhood of possibly from 100 to 120 answering jacks per panel, and that having used that and having left sufficient space in our out trunk multiple to handle calls going to the toll boards and going to the information boards and various conditions of that kind, which vary somewhat between cities, I might assume that we would probably have to leave three or four strips of jacks—on the average I do not think it would be much different from what this board is.

Q. That is a fair maximum board, isn't it?

A. I should say ordinarily that would be.

Q. Ordinarily that would be about the maximum size of the board?

A. It would not be far from what you might get as the amount of subscribers' multiple. It might be one strip [fol. 9263] less or one strip more.

Q. Does that include the 2400 additional that you admitted might be put above the multiple jacks shown there?

A. No, sir. I think the reason there isn't any more in this board is that the reasonable reach on the part of operators was reached at the point that is shown there.

Q. That is one of the determining elements in laying out a board?

A. Yes, we have to take the girls as we find them.

Q. Now, when a B board is supplied it not only requires the extra operating expense for the additional lines, but the necessary trunk jacks crowd off of the board some of the multiple jacks that there was previously room for; is that correct?

A. No, I would not say that because the mere fact that our trunking calls has reduced the necessary amount of answering jack space would probably give us enough room for the trunks.

Q. Taking an A board by itself without any trunking, the number of operators' positions is determined by the number of calls an operator can answer and the number of calls that are originated on an average by each subscriber's line, isn't it, the capacity of the girl and the demand of the subscriber?

A. During the busy hour, during the busy periods of the day. We have to take a great many conditions into consideration in engineering the board.

Q. With reference to the capacity of operators, you have used two or three different figures in the record, perhaps [fol. 9264] in different senses, with reference to the number of calls per hour that an operator can handle. On page 514 you mention 230 as the capacity, and on page 487 you refer to one girl handling approximately 150 calls an hour?

A. That would be the difference whether all of the calls were completed into the local multiple or all of the calls were trunked. That is the ratio of one to 1.5, which I mentioned a moment ago.

Q. You say here—this is your language, "One girl can handle say approximately 150 calls," and then again on page 503, if we get to the point of how many units an operator has ordinarily to carry, there we have a very definite idea, and we expect that the average overall load of operators would be around 130 units per employee hour per day?"

A. That reads 230, doesn't it.

Q. It is 130, in the record.

Mr. Burr: From what page are you reading?

Mr. McConnaughey: That is 503.

The Witness: Now, that is an error either on my part or someone else. That should be 230.

Q. Well now, in the other instances you mentioned 140?

A. No, I mentioned 150, didn't I?

Q. 150 I should say yes. Now, what was the difference between those two references?

A. In one case I am talking of units, 230 units, and in the other case I speak of 150 calls, and at that time I was referring to a curve in response to a question by Mr. Shuler, where I presented the curve which was an office with a hundred per cent trunking, and that is about the ratio of [fol. 9265] one to 1.5. To be exact it would be 153 rather than 150.

Q. What do you mean by units; when you spoke of the 230 you said you were referring to units?

A. We have for convenience in working with our traffic arranged a method of reducing all costs to units. That is, for instance, on a given board we have calls from pay stations, calls from subscribers' lines, some of which are completed into the subscribers' multiple. Other calls are trunked. They would not add together to give you anything you could use in a general term, and in order to carry on our business in a smoother way, we have arranged a set of what we call co-efficients, and counted the various kinds of calls and applied these co-efficients to reduce all of the calls to a common unit.

Q. Is that for the purpose of comparison, checking one class of service against another and one accomplishment against another?

A. It is for various purposes. It is for the purpose of laying out the operating force on the switchboard, one of the primary purposes. Another would be the case of engineering the switchboard. And the third would be, as you stated for comparative purposes as to the efficiency with which various offices are being operated.

Q. When you say 230 unit calls you mean you have figured that it is possible for an operator to handle 230 calls per hour; is that correct?

A. Yes, during average busy hours when the board is generally covered with operators.

Q. Now, on page 514 you explain the 230 units per hour as giving 15.65 seconds for an operator to handle a call [fol. 9266] of the unit type, including work time and neces-

sary idle time; does this unit call correspond to the kind of call on which you gave ten second as the work time?

A. Yes, that corresponds to the exact time. In my testimony I did not want to confuse you with fractions. The worktime on the unit call is 10.17 and corresponds to this over all time, including both the work and idle time, of 15.65 seconds.

Q. About one third to two thirds?

A. I think you will find that is 65 per cent.

Q. Well now, do you expect a good operator to keep the pace better than one third of her idle time during her particularly busy hour, letting her relax more when the traffic falls off?

A. It depends somewhat on the type of traffic in the office. If traffic is sustained for a period of three hours, we would not expect the operator to carry the 230 units during any of that time. If for a given half hour during that time the traffic peaks up, we would expect the experienced operator for a half hour period to carry about six and one half per cent more, or at the rate of about 245 units, for not more than one half hour during her half day.

Q. That is about the maximum performance that you would expect? It is the number of calls that an operator can handle during the busy hour that finally determines the number of your operators, the size of your switchboards and other big items of expense, traffic expense, is it not?

A. I would have to split that when I answer it. In answer to the first part of your question, the number of calls that [fol. 9267] the operator can handle during the busy hour would determine the number of operators that we would use during the busy hour.

Q. Yes.

A. But not for other parts of the day. It would also, in answering the next part of your question—the number of units that the operator could handle during the busy hour—would determine the amount of switchboard that it would be necessary to place in the office.

Q. Are there any other items of expense that are dependent on the capacity of the operator during the busy hour that you think of now?

A. There would be certain related items, such as the amount of direct floor supervision, as we provide a certain

number of operators to assist and coach the operators, and they would be reduced in proportion to the A operators.

Q. That is, there are certain incidental expenses that go along with the employment of the operators that would be increased as the number is increased?

A. Yes, sir.

Q. 230 calls represent the load which you reasonably expect the operator to carry on a typical board throughout her working time?

A. 230 units. You keep referring to calls. I am talking units. You will see why, because we might have on one board a considerable amount of trunking, or we might have what we call AB toll traffic or trunk calls; we cannot talk in even terms unless you refer to units.

Q. Well, say units then; that is correct?

A. Yes, sir.

Q. That is, that can be expected as a normal working rate?

A. Yes. There are certain modifying conditions; as you used the term, an experienced operator——

[fol. 9268] Q. Yes.

A. And I am carrying that in my head. If we had a considerable turnover in the city, so that we had a rather large number of inexperienced girls, we would have to reduce the load somewhat to allow for that inexperience.

Q. Now, you were referring in your direct examination, I think, to these units as having been worked out on a particular type of board that you there had in mind, did you not, or is that a general average that you expect on any type of board you may use?

A. The mere fact that we have reduced it to units takes care of that condition. That is a different type of board or different class of calls. In applying our co-efficients or in reducing it to units, we take care of that. We might have this same system of units applied to our toll board. We might have the case where the operators' load consisted of 20 calls in the busy hours. By the application of your co-efficients, you take care of those various conditions.

Q. Of course, if 245 is the maximum number expected per business hour on a typical A board with no trunking, then if it were all trunking, no A multiple, you would expect about how much?

A. If you are still sticking to units we would still expect 245.

Q. I am referring now to calls. Now, you make on a typical A board with no trunk your 245 units, wouldn't you, with your best conditions?

A. We would if traffic was of such a nature that it peaked for a half hour above an adjacent hour.

Q. On the same board if there was 100 per cent trunking [fol. 9269] how many calls would you get?

A. We would get 153 calls multiplied by six and one half per cent.

Q. 153 by 6½?

A. Yes, sir, 153 times 1.065.

Q. Why 153?

A. Because 153 is the number of calls that correspond to 230. The reason I cannot answer you offhand on your particular question is that in the particular department of the work in which I am interested I do not think in terms of 245. 230 on an A board, with no trunking, corresponds to 153 on a board with 100 per cent trunking. Now, those are the loads that are used in the particular work with which I am dealing from day to day. So that I cannot give you offhand the figure that applies to the 100 per cent trunking.

Q. It would be 164 or 5?

A. Yes.

Q. If half of the calls were trunked, there would be a corresponding increase over that number. What would that be—50 per cent trunking?

A. It would be an average between 164 or 5 and the 245. It would be in direct proportion.

Q. That would be about 205?

A. Approximately.

Q. An operator works most efficiently, does she not, on the answering jacks directly in front of her?

A. No, I would not say that. She works with practically equal efficiency on the answering jacks on her own or the adjacent position to the right and left. There is practically no difference on that.

Q. Excepting as she approaches the outside of the right and left board she has to reach a little further; is that the only difference?

A. Yes, and there are certain compensating things. Sometimes the answering jacks right in front of her may [fol. 9270] be so situated that it is awkward to get a cord up and in. It is sometimes easier when a cord is pulled free.

Q. When the traffic falls off you reduce the force and one operator may have two positions to cover?

A. There would be a time with falling off traffic when we would have half of the positions unoccupied.

Q. Yes; then she would have to reach to the right or to the left to reach the positions furthest away. Does that slow up the service?

A. No, that tends to improve it a little bit, because of the fact that the operator on the right and left—those positions are vacated—she can reach freely there. There isn't any other operator that might jar her arm or conflict with her. It improves the condition slightly as far as her working conditions are concerned.

Q. With the result that you can get just as many calls answered by one operator under those conditions as by two?

A. Your question was not phrased as to how many calls would be answered.

Q. No, but I asked you about the ease of operation?

A. Yes, and I answered that question, yes, sir, ease of operation.

Q. Now, how about the other?

A. The operator would naturally handle slightly less calls for the reason, not that the calls would be more difficult or that it would be less easy for her to handle them, but for the reason that there is less team work as given signals come in, and we have to reduce slightly the occupied time [fol. 9271] of the operator, so that there will be an operator available to answer the line signal within a reasonable time.

Q. How much of a reduction would that be?

A. At the time when every other position was unoccupied there would be a reduction of about four per cent in the operators' load.

Q. Suppose you take off two operators, leaving just one third of the force, what difference does that make in the number of calls they can handle?

A. I would say approximately six or seven per cent. In order to be more exact I would have to verify that. You are asking these along a line of figures that we do not use. We have a table which takes care of all of this, and which is in evidence in one of the Exhibits which I put in.

Q. One of these Exhibits which you have put in?

A. Yes.

Q. There is an approximate relation between the number of cords which an operator may have up in the jacks at a given time and the efficiency of the operation, is there not?

A. There again there would be a great many elements to consider, such as the holding time, that is, the length of time of conversation, and various elements of that kind. No, you could not say that there would be a relation between the number of cords and the efficiency of the operator.

Q. Assuming the same board, the same class of service, comparing one time with another, one day with another, [fol. 9272] or something like that, the number of cords she has up at a given time——

A. I think you would have to define what you mean by efficiency in that question. It is a very loose term.

Q. I am not speaking so much of the efficiency of the operator; I should have said the efficiency of the operation. Now, isn't it a fact that there is an unequal number of cords up at a given time shows an improper distribution of calls or the traffic?

A. Oh no, we would not under any condition hope to have an even number of cords. One operator of greater experience might necessarily handle more calls, or on a given position there might be a shorter holding time, which would mean a lower number of calls on an adjacent position with a different holding time. I don't think you could get any relation out of that.

Q. There would be a relation between the efficiency of the operators under those conditions? You say one operator could handle them quicker and faster than the other as one of your conditions?

A. I say if one operator handled more calls than another she necessarily would have more cords on her position, if other conditions happened to remain the same. But I can't see any relation between that and the proper distribution on the board.

Q. Or the efficiency of the operation as a whole? This Exhibit No. 1 shows 17 cord pairs, does it not?

A. That is the standard arrangement generally on boards of that type.

Q. And that is the standard? Why is 17 the standard?

[fol. 9273] A. Because that has been found in general practical operation sufficient cords to handle the calls on the position. It would be uneconomical to engineer different positions with varying pairs of cords, because conditions would change.

Q. Why have they selected 17?

A. Because on the basis of experience and actual practice that seemed to be the right number. That is not true on all types of boards. Other boards have other numbers.

Q. Isn't it true that that is based on the capacity of the operator to take care of them?

A. Very roughly. For instance, whether we are putting a board in in what we term a single office city or a multi-office city, we would not vary the number of cords. We would put 17 cords in in either of those conditions. That is, it would not be engineering economy to try to follow definitely the load with the cords on positions.

Q. Isn't it a matter of fact that 17 is about the maximum number that a girl can handle under ordinary conditions—under any condition?

A. 17 would be a rather high maximum, yes.

Q. You would never really expect to find 17 cords up at the same time?

A. I have seen 17 cords up on positions, not only on one position but on several adjacent positions. But it is not our intention to limit the operators' work by having too few cords. It is exceptional that the operators use the 17 cords.

Q. And if there were 17 up at the same time there would [fol. 9274] be a crowded condition which would bring about bad service, wouldn't it?

A. No, it might indicate a long holding time.

Q. Somebody would have to wait?

A. No, because there would be undoubtedly other operators that could handle the call.

Q. Other operators would have to handle the calls in that case?

A. Yes, sir, and that condition probably would not last more than a few seconds until some of those cords would come down.

Q. Suppose there was just one cord up at each position in an exchange, what would that indicate as to the number of operators?

A. You are speaking all this time of what type of board?

Q. The same type that you testified about awhile ago, Exhibit No. 1?

A. That would be a rather exceptional condition. It would rather be an indication of more than the right supply of operators.

Q. Had more operators than you needed at that time?

A. I would be inclined to think so.

Q. About what number of cords up at each position would you take to indicate that the operators were efficiently busy for an A board?

A. I could not answer that without having the holding times and other data.

Q. The holding time tends to average, doesn't it?

Q. No, we get considerable variations in holding time.

Q. Couldn't you answer that question assuming just an ordinary condition? Suppose you went into an exchange [fol. 9275] and found practically all of the girls with forty to fifty per cent of the cords up, what would you think of that as to efficiency, fine and dandy, like business was good and everything was all right?

A. No, I would take more than the number of cords up into consideration in deciding whether the force was overloaded or not.

Q. Would you take that into consideration at all?

A. Oh yes, there would be no question but what that would be an indication. As I say you would have to have other basic data.

Q. What else would you have to have?

A. The holding time would be the principal other factor.

Q. That is the holding time to determine the number of calls that were being handled, the holding time would affect the number of calls that were being handled; is that what you are getting at?

A. Yes, sir, and other elements such as percentage of trunking, that is, whether the calls were being completed at the local office.

Q. Suppose it was an A board, strictly A board.

A. That is, you mean an A board in a single office city?

Q. Yes.

A. The principal element there would be the holding time, which would have to be taken into consideration with the number of cords up in order to determine whether or not the load was high or low.

Q. Say a minute and a half. Now, the question is assuming a minute and a half holding time and a strictly A board, about what number at each position would you [fol. 9276] take as indicating that the operators were efficiently busy, that is, what number of cords up at a given time?

A. Well, that would be a mathematical calculation, but I would say from my experience that probably an average of about seven cords.

Q. About seven out of the seventeen?

A. Yes, sir.

Q. Ordinarily on such a switchboard even at a busy time you would expect a good deal of variation in the number of cords up, wouldn't you?

A. Yes, sir.

Q. Due to what?

A. Due to difference in holding times on different positions, due to the difference in the ability of the operator manning the position, and various factors of that kind.

Q. Difference in demand of different subscribers?

A. I don't think that would have any bearing on it.

Q. That wouldn't make any difference. You have not only the general peak load for the exchange as a whole, but there are special peak loads for individual operators, aren't there?

A. We have our lines so assigned to the switchboard that there isn't any abnormal peak load. We might have a short space of time when you would get more calls on one position, but the operators on adjacent positions can all work through that position. There is no complications arising from that.

Q. But this assistance that the girls give is not particularly quick or efficient, is it?

A. Yes, I would say it is.

[fol. 9277] Q. It requires the girl that is doing the assisting to look at her own work and the other at the same time, doesn't it?

A. No, it is part of the—she is trained to take calls on her own or adjacent positions, and these supervisory employees are there to see that the girls are working in the right direction towards any slight peaks that might occur. There is no complication from any such source as that.

Q. Don't the girls reaching cords that way tend to more

confusion and collision with each other in handling the calls?

A. There is nothing material in that. They are trained in proper methods of doing that or if necessary in passing the cord to an adjacent operator without either stopping their work on what they are doing, or interfering with the girl. We have instructions covering those points, that it be done in a smooth and economical manner which does not result in confusion.

Q. That assumes, of course, that both operators are well trained and efficient?

A. There are no particular complications in training operators in those elements of work.

Q. With the very best of management and planning in one of these standard switchboards such as you have shown in your photographs you have a great deal of extra equipment and extra operators due to the general peak load of the traffic, and still more on top of that on account of special loads at separate positions?

A. No, my answer to that would be no.

Q. Do you have any extra equipment? You have to pro- [fol. 9278] vide margins of equipment and operators to take care of peak loads?

A. No, other than what I have outlined, to provide enough positions so that we would have——

Q. So that the peak load can be taken care of?

A. So that the load would not exceed the 230 or 240 in a busy hour.

Q. That means, of course, more equipment than if it was all at a steady rate throughout the 24 hours; the fact that there are peak loads calls for more equipment and more operators than if there were no peak loads, doesn't it?

A. Absolutely, yes. There is only one answer to that question.

Q. Now, you have indicated on page 512 of the record something about a condition with reference to the employment of operators. You indicate that you run into periods of prosperity in a city and the girls show a high turnover, so that you have to take on many new girls whether you want them or not, until you can train them to a proper degree of efficiency.

A. Are you referring to page 512?

Q. Page 513. It commences on 512 and runs over to

513. Now, that affects different communities different ways, I suppose, and varies at different times?

A. Yes, sir.

Q. Are you familiar with those conditions in Ohio, industrial conditions, the greatest difficulty in employing operators in a general way and their general disposition or independence after being employed?

A. I am generally familiar with the employment conditions in Ohio, yes, sir.

Q. Now, besides this effect of prosperity on the opera- [fol. 9279] tors, industrial conditions at a given time, there is also the weather, extreme conditions of heat or extreme continued cold or rain or continued good weather that may attract girls outdoors for the summer season, or epidemics or other causes of difficulty of getting and retaining operators, are there not?

A. Those would cause slight variations in the percentage of absenteeism in the offices in question.

Q. And some difference in the ability to employ operators as they were needed?

A. Yes, I think it might have an effect on that. There would be seasonal conditions that would affect employment.

Q. More or less from time to time?

A. Yes, sir.

Q. You would not say that they are slight, would you? Some of them are slight and some of them are rather serious, aren't they at times?

A. Well, I didn't recognize any that you have mentioned that would be serious over any extended period. Of course, we have periods of epidemics, as we have had a couple of times in the past three or four years, but those are conditions which cannot be considered as at all general.

Q. Now, you have to adjust your hours of work, rates of pay, and incidentally your service, to these conditions, do you not, that is, to the kind and amount of service that you can get out of these employees that conduct these operations?

A. Yes, all those matters are considered in both our quota conditions and in our other management problems.

Q. Have you a copy of your Exhibits 8 and 9?

A. I don't recognize those by number.

[fol. 9280] Q. Those are those which show traffic loads in two typical offices?

A. I think so, yes.

Q. You show there 250 calls per hour per operator. Referring now to the typical business office, this shows a peak between ten and eleven, a very sharp peak between ten and eleven, and one of the numbers at the side of that chart——

A. Those are calls.

Q. Calls per what?

A. Calls per hour. They are simply a scale which if you cross until you hit the curve shows how many calls per hour.

Q. It does not refer to the number of calls to be handled; you could reduce that to calls to be handled by a given operator?

A. Yes.

Q. That is what at the peak on that typical day?

A. That would require 90 operators. I have got to reduce that to units.

Q. That is about 250 units?

A. I am assuming that that is 100 per cent, and that all of the calls out of that office are trunked, and on account of the peak being as it is there, would result in handling 245 units during the busy half hour.

Q. It would take two or three extra operators from ten fifteen to eleven wouldn't it, four more from 10:15 to 11:45, and two more from 10:00 to 12:00, for which there would be no work at any other time during the day?

A. No, we would arrange our operating schedule so that we would bring approximately the required number of operators on during the busy period hour; the time im- [fol. 9281] mediately after that to give reliefs to operators who had been working a sufficient length of time; and very shortly after that peak period, we would consider giving lunches to operators who had started in on early tours of duty, so that there would be no excess of operators. We would fit the operators to the requirements during the different hours.

Q. You mean to say you have no extra force during this period from 10:15 to 12:00 because of the time that is taken off for lunch and rest periods and so forth; that your force would be uniform during the day?

A. There would be practically no excess of operators during that period. I have had drawn up a schedule which fits that curve, and which during the whole day shows we

have an excess equal to 22 hours of work, which is 22 hours on a total of something over a thousand hours.

Q. Is that introduced as an exhibit in this case?

A. No, sir.

Q. Will you put it into the record or let us see it?

A. Shall I put——

Mr. McConnaughey: Is there any objection to putting it in the record?

Mr. Burr: No. No objection.

The Witness: I have here a curve drawn up in response to Mr. Shuler's statement that that business office curve would make no difference, that he would schedule operators straight through the day; and I have had a schedule drawn up according to standard methods and another one drawn up according to Mr. Shuler's method, and we would be glad [fol. 9282] to introduce both of those as exhibits.

Q. All right, let's see those.

A. This is an exhibit drawn up according to the standard schedules and shows a requirement of 109 operators to operate the office. This second exhibit is one drawn up according to Mr. Shuler's suggestion and shows a requirement of 120 operators, or approximately 10 per cent additional force; that, if applied to the Bell system operating, would require an additional expenditure of about $14,000,000.00 per year in operators wages.

Mr. Burr: Let the two exhibits be marked Allen's Exhibits Numbers 12 and 13.

And thereupon the paper writings above referred to were marked for the purposes of identification and were offered and admitted in evidence on behalf of the Ohio Bell Telephone Company, and are herewith submitted, marked respectively Allen's Exhibits Numbers 12 and 13, and made a part hereof.

Q. Each sheet is a complete exhibit?

A. Yes, sir.

Q. Mr. Allen, you were also asked for some other data, circulars or reports showing the results of your studies on the basis of the instructions you have issued are now in force in the various associated companies on the effect of loading. "We have these circulars similar to the ones I

entered here." You were asked to produce some of those circulars?

A. As I take it this schedule here is in response to that. [fol. 9283] It answers that request. It is answering Mr. Shuler's argument, yes.

Q. The next one is a request that you furnish, referring again to the reports on loading—"Will you furnish those reports for the cities affected in this hearing?" Have you that data?

A. No, I think I stated in response to that question that that data was available here in Ohio.

Q. From the officers of the local company?

A. I did not agree to bring any data of that kind.

Q. "We would like to have them from the General Staff; also when it comes to cross-examination, we would like to have you prepared to furnish us full and complete information with reference to the LaCrosse and Wilmington boards, about which you have testified." Have you that data ready?

A. I was not asked for anything in my testimony of that kind, was I?

Q. No. What is the difference between Exhibit 12 and Exhibit 13?

A. Exhibit 12 is a schedule drawn according to our standard routines as set up in traffic circular 117, which was introduced as an exhibit; and Exhibit 13 is a schedule drawn up according to the suggestion made by Mr. Shuler that the correct method would be to schedule particularly the same number of operators throughout the day in this business office.

Q. And you say that it shows a difference between 120 and 109?

A. The lower left hand corner of the schedules you will find it totaled.

[fol. 9284] Q. Now, you think that is the best possible arrangement of operators through the day and it is the way you would do it normally?

A. Yes, we have in all these matters two things to consider. One is the number of operators required during the different hours. The second is the assigning of reasonable tours of duty to the operating force. In this particular office, it is difficult to build a schedule, and such excess hours

as we have are due to the difficulty in covering the requirements and giving the girls reasonable tours of duty.

Q. Now, each one of these horizontal lines represents one employee, I assume?

A. The horizontal lines are shown on there for the tours of duty which are permissible in that office, and at the left of the horizontal line is a figure showing how many, if any, girls are assigned to the particular trick indicated by the horizontal line.

Q. What is the dotted line?

A. The dotted line is a permissible trick, but not to be used unless it cannot be avoided.

Q. Then on this Exhibit 12 the number 4 to the left of the vertical line indicates that there should be four on that trick; that is, four from seven to——

A. I do not find that figure on mine. Those numbers that you are indicating as on the line are the times at which the operators working that particular tour of duty are given their fifteen minutes relief for the first half of their tour of duty; of the six operators who work that tour of duty, four of them received fifteen minute relief duty during [fol. 9285] this 15 minutes; two received a fifteen minute relief period during the next. Later on at that period you will see six, and that indicates the time at which the six operators working that tour of duty are given their lunch hour, and further on on that same line you again come to the figure six, which indicates that during the afternoon all six of those operators are given a fifteen minute relief during the period from 2:30 until 2.45 P. M.

Q. What are these numbers here on the lines to the right?

A. On the lines to the right about the middle of Exhibit 12 are shown letters which indicate that that particular half of a trick can be assigned to a girl who works a tour of duty towards the left of the sheet, having a corresponding letter. In other words, the tour at the top having these letters can be assigned to any girl who worked tricks capital A, capital B, capital C, capital D, or small a at the left of the form.

Q. And that gives how many hours work per day to the operators?

A. That assigns eight hours of work to the operators who work on day tours and seven hours of work to operators who work part of their time during the evening.

Q. That is uniform is it?

A. No, that is not uniform. There are some cases where in some places in smaller cities the operators work different hours of duty, and in some cases where the evening operators work eight hours the same as the day operator. But this is one of the forms, and drawing the schedule on any of the [fol. 9286] other standard forms would make no material difference.

Mr. Burr: May it be understood that Allen's Exhibits Numbers 12 and 13 are made a part of the record?

Mr. McConnaughey: Yes, sir.

Commissioner Poor: We will adjourn at this time until May 12.

And thereupon the further hearing of this matter was adjourned to Monday afternoon, May 12, 1924, at one thirty o'clock.

[fol. 9287] Monday Afternoon Session

May 12th, 1924.

And thereupon the further hearing of this matter was resumed pursuant to adjournment.

Present:

Karl E. Burr and Charles S. Maltby, on behalf of The Ohio Bell Telephone Company.

W. S. McConnaughey, and J. B. Harshman, on behalf of the City of Dayton.

T. H. Miller, on behalf of the City of Canton.

Henry M. Hagelbarger, on behalf of the City of Akron.

Frank F. Gentsch, on behalf of Certain Protestants.

Commissioner Poor: The matter set for hearing this afternoon is the further hearing of the tell rate case.

[fol. 9288] And also ARCHIBALD J. ALLEN, resuming the stand for further cross-examination, continued his testimont as follows:

Cross-examined by Mr. McConnaughey:

Q. Mr. Allen I want to ask you a few questions about Exhibit 12, which is an exhibit showing the arrangement of

operating forces, typical business office. I understand by that that that is a typical central office where 99 per cent of the business is business houses?

A. That is where the stations are stations in offices or business houses or of that nature.

Q. Now at the top and to the left of this sheet as it is arranged here there is printed "Operators requi-ed," and opposite that a series of numbers. I understand that to be the number of operators required in each half hour period in the day?

A. The number of operators required at the switchboard during each half hour of the day, yes, sir.

Q. The next is the number of operators provided. Now let me ask you, is this exhibit made up from an actual office or is it something you have arranged to illustrate the point that you are making with Mr. Shuler in your direct examination?

A. No, this is data from an actual telephone office.

Q. Yes, that is what I understood. Then on this day there were provided each half hour the number of operators shown in the second line; that is correct, is it?

[fol. 9289] A. On this example which I am putting down here, that number is provided.

Q. Yes, that is what I understand; and the third column is the number that are available for relief and lunch period during each half hour?

A. Yes, sir.

Q. And that would be the difference between the first column and the second column?

A. Yes, sir.

Q. Then in the next column you show opposite the word "lunch"—what is that time, lunch?

A. That is time required.

Q. Time required for lunch and time for relief, I see.

A. Yes.

Q. Time required for lunch. You show a series of figures; what do they represent?

A. That is the time that different operators are away from the switchboard for their lunch period.

Q. And during that time operators to relieve them are supplied from these that are available for relief and lunch as shown in the other column?

A. That is correct.

Q. And the same is true with reference to the line showing numbers for relief?

A. Time required for relief, yes, sir.

Q. Down at the bottom is the line opposite "excess," and that shows number of operators in excess of what is required for all purposes in each half hour during the day?

A. That is correct.

Q. That is the way it is arranged?

A. Yes, sir.

[fol. 9290] Q. Now take the first column, or the first line, operators required, the second number, 19, in that line, and in the next line, that means that there are 19 operators required during that half hour, as I interpret it?

A. That is right.

Q. Immediately underneath is the number 51 operators provided. That means that in that half hour you have 32 more operators than are required; is that right?

A. Yes, sir.

Q. And at that time during that same half hour there were only 4 to be relieved?

A. That is correct.

Q. So that that left an actual excess of 28 at that time?

A. That is right.

Q. As shown by the last column?

A. Yes, sir.

Q. And you actually did have those 32 extra operators there available?

A. Yes. I presented this exhibit on which this is based to show that it was the most difficult type of a curve to draw a schedule to fit, and that it would, if carried through, result in conditions of this kind and when we actually had the schedule worked out it did result in a considerable excess number of operators hours during certain periods of the day.

Q. This is your own operating schedule, the schedule you made out according to the methods that your department works out and recommends to the Associated Companies, isn't it?

A. This is not a schedule that we would use in this office. We have found that in offices of this kind it is advisable to [fol. 9291] make a change in the standard conditions whereby we provide a considerable number of operators working with a half hour lunch period instead of a one hour lunch period. That works to advantage from the fact that

in a section of a city where all of the business is of a business nature there is practically nothing for the operating forces to do during a lunch period, and they much prefer to work, have a shorter lunch period of one-half hour and on that basis get through earlier at the end of the day. The difficulty in drawing this schedule, as I have stated in my direct testimony, is the fact that we do not have enough falling off in telephone business during the noon hour so that it is possible to get a one hour lunch period for the operators without having a considerable excess during the different periods of the day. This excess, if I understand the questions you asked me a short time ago, has nothing to do with the question of whether we have distribution of traffic or do not have distribution of traffic. This is a condition that exists in this typical business office where we have this peculiar condition. There are only a very few offices of this kind. Say in a city like Columbus there would be none of them; in a city like Cleveland there would be probably two or three. It is introduced to show that situation in this type of office.

Q. You call this a typical business office, Mr. Allen?

A. Yes, sir, it is typical of an office of this nature of a business office, but I was trying to help you out by saying that [fol. 9292] it has nothing to do with the proposition of whether we have distribution on the board or not.

Q. Do not try to help me out any more about that because that is not what I am after at all. I am not interested in that at the present time. I am just trying to understand this schedule. That is all. Now in that half hour and in the next half hour you had 28 operators in excess of what you needed? That is correct, isn't it?

A. That is correct.

Q. And in each of the half hour periods during the day you had the number of excess operators shown here?

A. In each of the half hours when there was any excess of operators it is shown here.

Q. Yes, that is right. That is what I mean. And a total for the day of 62½ hours out of a total of 718. That is operator hours; is that correct?

A. It is a total of 62½ hours.

Q. That means operator hours?

A. That is operator half hours.

Q. Yes; it says operator hours and the total day is 718 operator hours?

A. The total operator hours required at the switchboard is 718 hours.

Q. And the total required was 725—the total provided, instead of required, was 925?

A. To take care of the requirements at the switchboard, to take care of the necessary lunches and necessary reliefs.

Q. Now to get at that, the excess of 925 over 718, of 925 [fol. 9293] provided over 718 required, was 207?

A. Yes, that is correct.

Q. That is what you say was required for relief and lunch?

A. Yes, sir.

Q. The number required for relief and lunch was 93, and for relief during the relief period was 51½, was it?

A. Yes, sir.

Q. Now you only required 93 plus 51½ for relief during the relief and lunch period, that is 144½, isn't it?

A. That is correct.

Q. So that in this 207 available for relief and lunch there was 62½ hours that you did not need, wasn't there?

A. That is correct.

Q. Yes, and that should be added to your 62½ hours that you show as an excess?

A. No, that is the 62½ that we show.

Q. Well, is it?

A. Yes.

Q. Now 10:00 o'clock to 10:30, during those seven half-hour periods you show 103 operators provided and that is the highest number you provide any time during the day?

A. That is right.

Q. That means that the next lower number is 93 which runs from 1:30 to 4:00?

A. That is right.

Q. Now that means for three hours and a half, from 10:00 to 1:30, you employ those 10 operators, and that is the only employment they have during the day, does it?

A. No, all of the girls work a full day.

Q. How do you arrange that?

A. Just exactly as this exhibit shows, as we show at the [fol. 9294] side the number of girls and the exact hours that each girl works. As I stated, at the lefthand side of the exhibit where we show the figure 6, that means that there were six operators who started work at 7:00 o'clock and who finished work at 4:00 o'clock. Those girls were given their

lunch period from 10:30 to 11:30 and were given their reliefs as indicated on the line by the small figures near the middle of the forenoon and afternoon tour of duty.

Q. Now how do you indicate the lunch period there, Mr. Allen?

A. We indicate it by a slight bracket on either side of the figure indicating how many operators go to lunch. On that particular line the figure 6 is shown on the line from 10:30 to 11:30 with a little bracket around it showing that six girls had their lunch from 10:30 to 11:30.

Q. What does that upright line indicate, 4 on one side and 2 on the other?

A. That means that 4 of the girls had their 15 minute relief period between 8:30 and 8:45, 2 had it between 8:45 and 9:00.

Q. Now what are these lines as to which there is no number in the column under the head "trick?"

A. Those are possible tours of duty which we use where they are advantageous in drawing a schedule, but it did not prove advantageous in drawing a schedule for this particular office. This is a form which has been developed and found to be a considerable time saver on the part of people who draw schedules and all of the tours are drawn on to [fol. 9295] obviate the person who is drawing the schedule using a ruler and pen or pencil to draw in the tricks.

Q. So that if there is no number opposite the line there is no operators to correspond with that tour of duty?

A. That is correct.

Q. Then this sheet is a standard and it is just a question of selecting how many operators there shall be on each one of these standard tricks? That is the meaning and purpose of it?

A. That is covered in Traffic Circular No. 117 which has been supplied to the Associated Companies for assistance in this work, which is called the adjustment of force work.

Q. Now the number of operators required is something, I assume, that is developed from a study of the calling rate in the office?

A. No, it is developed by taking racoeds which we call peg counts of the amount of traffic occurring in that particular office during each period of the day, taken sometimes—taken always by hour periods and part in half hours; when there is a considerable variation certain counts are taken by half

hours so that we are able to develop the units up into either hourly or half hourly periods.

Q. Well, you get the number of calls from experience in that particular office and work out from that the number of operators to provide by dividing the number of calls during each hour by the number of calls that an operator can handle; is that correct?

A. It could be done that way; we have provided tables which saves this dividing and makes it possible for the person doing the work to do it much quicker than if they [fol. 9296] stopped to divide it.

Q. Then that means that the dividing has already been done and is set down in a schedule; is that correct?

A. That is correct.

Q. But that is the way it is gotten up?

A. Yes, sir.

Q. Now that is embodied in one of these circulars you have introduced in evidence?

A. I don't think I introduced it—yes, I think I did introduce 117.

Q. Yes, 117 was introduced.

A. It is in evidence. I don't know whether Mr. Anthony or I put it in.

Q. Well, you put it in. Now, taking this first line, which is used as indicating that 6 operators were on duty from 7:00 to 4:00, it shows that all 6 of them were off for lunch from 10:30 to 11:30; that is correct, isn't it?

A. Yes, that is correct.

Q. Now during that period 6 of the operators that are shown in this third line as being available for service were in their places?

A. That is practically correct, yes, sir. In reality it might be that 6 of the 13 operators who were available for lunch and relief were taking their lunch. We have to get lunches for all of the people that are there and during a part of the time the girls who are available for lunch and relief take their own lunch or relief or else give it to some one else.

Q. I do not exactly understand that?

A. We have 13 girls more than are needed at a certain hour. The obvious thing to do would be to let 6 of those [fol. 9297] girls, if we wanted to get some lunches out, the obvious thing would be to let 6 of those girls go to lunch. If you have 6 more than you need, you let them go to lunch.

Q. And put no one in their place?

A. And if you had 6 more than you needed at that hour.

Q. Well, now, this shows tricks varying all the way from eight hours—it is between seven and eight hours, isn't it? Some of them are seven and some of them are eight?

A. On this particular type operators who are required to work part of the tour in the evening are set up as working in the evening, where operators who work their entire tour of duty in the day time are shown as working eight hours. That is not a standard arrangement throughout the country. It is in general use in the larger cities where operators have to do a considerable amount of traveling, and particularly in cases where the operator works a tour of duty during the forenoon and another during the evening; the hours of work are somewhat short to partly offset the traveling time.

Q. That is, the girls who work part of the time in the evening only work seven hours for the same pay that the others who work during the day work eight hours for; is that correct?

A. Girls who work part of their time during the evening work a shorter tour of duty than the girls who work in the day.

Q. For the same rate of pay?

A. Not necessarily. They may get—in a good many places, in addition to that lower number of hours of work they may get some slight differential in money sometimes [fol. 9298] to offset the undesirability of evening work; so that they may get the same or may get more pay.

Q. That is, they are paid the same rate or more for the shorter period of time?

A. That is generally true.

Q. This shows 18 hours, doesn't it? That is correct, isn't it?

A. You are referring all the time to this same exhibit?

Q. Exhibit 12, yes.

A. I cannot understand that question. You will have to be more definite. Are you referring to some one line on that?

Q. No, I am referring to the exhibit as a whole. How many hours of operation does it cover?

A. All day; that is, the night hours are not shown in detail; from 11:00 o'clock until 6:00 in the morning, the hours are shown as covered by the space at the right; 11:00 P. M. to 6:00 A. M. is shown at the right.

Q. How is that force distributed during the night, according to this sheet?

A. There are 6 operators at work from 10:00 in the evening until 7:00 in the morning. They are shown on the very top line at the left.

Q. What are these other numbers at the right in that column, 3, 6 and 1, lower down?

A. Those are operators who work—opposite the 3—operators who work a morning trick and an evening trick. The same thing is true against the 6. The other 6 operators do work through the morning and come back and work during the evening, and the same way with the 1. Those are——

Q. Those are shown on both sides of the sheet?

[fol. 9299] A. The same as the night operators are shown on the same side of the sheet.

Q. They are not duplicates, however?

A. They are not duplicates. It is merely for convenience in carrying the eye across the form that those tricks which are not continuous are shown at both ends of the form.

Q. Do you know of the practice prevailing any place among the Associated Companies of hiring operators particularly for the peak load, residence peak load, in the evening; there is a residence peak load in the evening between 7:00 and 8:00, isn't there, as a rule?

A. In general the traffic in a residence office is higher between 7:00 and 8:00 than it is during a good many other hours during the day.

Q. Do you know of the practice prevailing in some places of hiring girls just for that peak in the evening and paying them practically as much, or as much as those who have an eight hour trick during the morning or afternoon?

A. No, I do not.

Q. That does not prevail any place in the Bell System?

A. No, sir.

Q. What is the function of supervisors of local exchanges?

A. They assist the operators in carrying out the handling of calls, take difficult calls off of their hands and handle them, and in general assist and train operators, particularly newer operators. They devote considerable time to showing them the correct methods of handling various kinds of calls and assist them in various ways.

[fol. 9300] Q. Do they check up on the service that is rendered by the ordinary operator?

A. Yes, they are continuously in touch with the service being rendered in their division to see whether any operator is either through carelessness or through lack of knowledge making any mistakes in her work and show her the right way to carry on the work.

Q. How do these supervisors plug in to keep track of what is going on?

A. We have on every operator's position a double jack which allows the supervisor to plug in and be right in on the operator's position so that she can hear exactly what is happening on that position, and supervisors in all cases wear head sets while carrying on their work, so that they can plug in and with a new operator they will plug in and oftentimes stay in on her position for a considerable period, even if they go down their section to help out and see what is going on in some other case; so that if this new operator should meet with any difficulty they will come right back and help her out so as to protect the subscriber from not getting proper attention on that position.

Q. A supervising operator is a regular feature of all local exchanges, is she?

A. Of all local exchanges of sufficient size to justify it. We would not have a supervisor in an office of three or four positions; but where we have say seven or more positions, there would be some one most of the time on the floor doing this supervisory work.

[fol. 9301] Q. Now that is a part of the system of operation that your department develops, this supervision, is it?

A. Yes, we work with the companies on the best methods of giving service and the use of supervisors to render that best service.

Q. Is this supervision practice covered in your Circular No. 117?

A. The number of supervisors that should be provided on a given number of positions is described in No. 117.

Q. Have you a standard number of supervisors to be used on a certain number of stations? Is that worked out?

A. No, it would not be on that basis. The number of supervisors is worked out entirely on the number of operators and the number of positions in the office.

Q. Well, that is what I had in mind. Perhaps I did not express it very clearly. That is, you have a standard of

so many supervisors to a certain number of operators, or one supervisor to a certain number of operators?

A. Varying with whether or not all of the positions on the board are covered. We have tables which, if you have the number of operators for each half hour, you read directly from this table the number of supervisors that we would recommend providing under those conditions.

Q. Then the number of supervisors would be in a definite ratio to the number of operators in service at a given time?

A. That is generally true, yes.

Q. In larger offices do you go a step further and supervise the supervisors?

A. Yes, we have in offices, after they reach a certain size, [fol. 9302] in fact in our offices generally we have some one who is either operator in charge or chief operator; and where the office is large enough so that it has floor supervisors, the floor supervisors would report to the chief operator of that office.

Q. Just what do you mean by a floor supervisor?

A. These girls you have just been talking about who actually work behind the operators.

Q. Then is there also a form of supervision that is carried out by what you call observers?

A. Well, I don't know as you would term that exactly supervision. We have observers. In all larger offices we have girls that we call observer instructors.

Q. Observer instructors?

A. Observer instructors who are provided to coach operators that are found to be deficient in any of the work that they are supposed to do, and coach them in their weak points and bring them along.

Q. That is part of the training system rather than part of the supervision?

A. Yes, I would not consider them supervisors. They are really of a training nature.

Q. That is, you are carrying your training on outside of the training proper, and watching the girls after they are trained to see how they put in effect what they have learned in training?

A. Yes, we have found that by combining some observing to find the points in which the girl is making mistakes and then showing her how she should have handled this particular connection has been one of the most profitable ways

of improving the work of the individual operators and we [fol. 9303] provide the necessary equipment and instructions for carrying on work of that kind.

Q. Now is there any difference between service when it is supervised and service when it is not supervised as to the speed with which calls are handled, for instance, the number of calls that are handled within a given time?

A. Yes, I should say that in the properly supervised office not only is more work accomplished by a given force, but better work is accomplished by that same force.

Q. By better work what do you mean? Quicker, more accurate, in making connections?

A. Quicker and more accurate work.

Q. There isn't anything else involved in it?

A. Well, all of the different things that go to make up the work. It would depend on just how you used that word "quicker and more accurate", as there are varying degrees of what you mean by accuracy. We have various technical terms, such as irregularities and errors—all of the different phases of operating are improved by the provision of well-trained supervisors.

Q. And there is a very considerable difference that is due to the supervision over an office that is not supervised?

A. Yes, I siad that the service is decidedly better in a well-supervised office.

Q. Now, Mr. Allen, on Page 432 of your testimony there is an answer that you gave that I wanted to inquire if it is written just exactly as you intended it should be. You were being asked to define what the terms traffic and traffic engi- [fol. 9304] neering mean as applied to the telephone business. And at the bottom of page 432 you say: "The traffic engineering work consists in the specifying of proper types and quantities and arrangements of telephone equipment, not only the switchboards on which the calls are actually handled by operators, but the connecting trunks, which term would apply to the wires between local offices and the toll circuits which are trunks connecting different cities or exchanges." Now did you intentionally leave out the connection between the switchboards and the subscribers stations in that statement? See if you have not left that out in the first place? As I read it you have.

A. I do not think that occurred to me. I do not know of anything that a traffic engineer has to do particularly with

providing lines of that nature. He would have the work of saying at what place on the switchboard the subscribers lines would be connected, but nothing to do with providing the lines that I know of.

Q. That was intentional then?

A. I was only giving a very general review of what a traffic engineer might do. I did not by any means expect that I covered all of the details of a traffic engineer's work in that one sentence or paragraph.

Q. I understand that. But you now say, as I understand it, since your attention is directly called to that particular thing, that the traffic engineer's duties do not cover the means of connecting the central office with the subscriber's station?

A. No, I have said that the traffic engineer would have [fol. 9305] the providing of the proper places where the subscribers' lines would be connected to the switchboard. I do not know of anything particularly that he does in connection with the line between the subscriber's station——

Q. Alright.

A. I might say that I am not an equipment engineer. I am only answering you in connection with equipment engineering to the best of my knowledge as a telephone traffic man. I am not a specialist on that work.

Q. In your investigations concerning traffic you do cover or have a good bit to do with types of equipment to be used in various cases, do you not?

A. Yes, I have had a great deal to do with types of switchboards and operating methods. I haven't anything to do with the details of traffic engineering that would cover exactly the point you are raising now.

Q. What is your exact position?

A. I am traffic results engineer.

Q. Traffic results engineer?

A. Yes, sir.

Q. Just exactly what are your duties personally?

A. I described in my direct testimony my duties in considerable detail. They consist in the provision of such circulars as those covering peg counts, those covering adjustment of force, covering local and toll central office management routines and work of that kind. I also in that testimony described the fact that we have on our Staff a local traffic engineer, a toll traffic engineer and a toll special

problems engineer. I am only in general familiar with [fol. 9306] actual switchboard engineering.

Q. It is a particular function to work out such details, such methods, as are involved in this Allen Exhibit 12?

A. Yes, that is covered in traffic circular 117, one of the circulars that is issued by my department.

Q. It is the method of handling the traffic by the people in the exchanges that you have particularly to do with, is that it? Is that correct?

A. That is correct.

Q. In the traffic department there are three other divisions with which you have nothing to do excepting in an incidental way, as your work may come in accidental contact with it, is that it?

A. We work closely together of course.

Q. You work together?

A. We do the work.

Q. Your men are responsible for their particular parts of the job, however, when it is completed?

A. That is correct.

Q. Now you described these four different divisions. What is this fourth branch of the traffic engineering, devoting its attention to special traffic matters? What do you include in that?

A. There are a great many special problems come up that must be assigned to some one, and for convenience in organization, at the discretion of the head of the department, he assigns certain of those to this special traffic problems engineer. In addition to that, as I have stated, he carries the total fundamental plan routines and the toll rate quoting routines.

Q. Would that branch have to do with things that might [fol. 9307] be ordinarily handled by any of the other branches, but which, because of their special nature, required some special treatment?

A. No, in general they would be some special problem that did not fall under the other headings.

Q. Now the department, this first department, which is the traffic engineering department, local traffic engineering department, you say is responsible for the specifying of the types and quantities and arrangement of the equipment which will best meet the problems confronted in giving local exchange service. Now that hasn't anything to do, how-

ever, with the development of central office equipment, has it? That is entirely outside of the traffic board, isn't it?

A. No, the local and toll traffic engineers are busily engaged in problems of the development of both operating methods and types of equipment.

Q. Is that the department which considers and plans and develops new mechanical devices to put on the central office equipment?

A. Well, they do the traffic work in connection with those developments.

Q. I am asking you about the mechanical work, the electrical work?

A. No.

Q. Invention?

A. That is done in our department of development and research, as Mr. Rhodes testified.

Q. Now which department was it that experimented over the considerable period and developed a type of tinsel used in the cords which was strong enough to serve the purpose required by the cord? What department developed that?

A. That was done by the development and research,—plant engineers.

[fol. 9308] Q. Not by the traffic department?

A. This work is done in cooperation, various parts of nearly all of the development work, where the traffic requirements are outlined by the traffic department. You cannot expect a man to be an expert on all lines.

Q. That is true.

A. He does the work that he knows, or outlines the conditions which he knows will be beneficial, and then some one who is an expert in the electrical or mechanical or technical field does the best he can to meet those requirements. Then that material is taken, for instance, by the traffic people and given a thorough test to see whether it meets the requirements which they have in mind, and additional suggestions made, until a satisfactory method or piece of equipment is developed. And then it is recommended for the companies.

Q. Now you stated that by the development of this improved type of cord a saving of $7,000,000.00 per year in the expense of operators wages had been effected to the advantage of the Associated Companies. Tell us just how that saving was effected?

A. By the use of this cord the time which the operator spends in handling cords, actually putting up and taking down connections on the switchboard, was reduced by a half second per handling time on one cord on a connection——

Q. On one what?

A. One cord.

Q. One cord?

A. The operator on a local connection has to handle two cords, one on which she answers the calling party, the second on which she makes the connection with the called number [fol. 9309] or to a trunk leading to the called office, so that on the connection of that nature there was a saving of one second per call. That makes it possible for the operators to handle a larger number of calls in an hour, and correspondingly reduces the number of operators required to handle the number of calls originating in the office.

Q. Whereas I think, as you said, before this improvement was put in it took 11 seconds to complete the call, afterwards it took 10?

A. That is correct, applying to a call into the local multiple on a standard No. 1 board.

Q. What is the effect as applied to any other kind of a call—a trunked call?

A. A trunked call, a saving of one second at least, but the trunked call takes about 15 seconds of work, so that the per centage of saving would be——

Q. Not quite so large?

A. Reduced by that amount.

Q. Tell us how the difference in this material made it possible to save that time?

A. The operator in getting this stiffer cord from its cord seat and getting it bent and put into the multiple jack took this time, and by providing a cord which could be more easily handled the operator was enabled to do the same work in one second less time. In order to give you a little better idea of the importance of those things, we found at a later date—some of the plant men found by putting a fairly heavy coat of wax on the outside of the cord it helped them in [fol. 9310] maintaining the cord. But just that added stiffness of the cord that came from putting the wax on it made it noticeably more difficult for the operator to manipulate these cords and we had to send out instructions that the small saving of maintenance due to waxing these cords was

much more than offset by the reduction in the work that the operator could accomplish.

Q. Now this is the same thing as to which Mr. Rhodes testified to a saving in cost based upon the fact that it would last longer, as I understand?

A. Yes; fortunately in this case the cord not only was better from an operating point of view but better from a maintenance point of view.

Q. But what you are talking about here, this $7,000,000.00, is entirely based on the shorter time in which the operator could make connections; is that correct?

A. Yes, sir.

Q. Now what is your arithmetic on that $7,000,000.00?

A. I applied the saving on local and trunked calls and weighted those together for the system; about 60 per cent of the calls are trunked, so that on the basis of 40 per cent of the calls being local and 60 per cent of the calls being trunked, we found that there is a saving of 7½ per cent on the average, and we have in our records the payroll of the local operating forces in offices where these calls are handled amounting to $105,000,000.00 per year. I applied the 7½ per cent to the 105 millions of dollars and that gives [fol. 9311] $7,875,000.00 a year that is saved by these cords.

Q. Seven million what?

A. $7,875,000.00, and I gave you the figure of seven million as the round number on that.

Q. Now you use 105 as your operators wages; you have used 140 in a number of places; what is the difference in those figures?

A. I excluded the wages of toll operators inasmuch as the toll operating time is so long that the saving on one second per cord handling time would only be a rather small element.

Q. This is the local exchange operators payroll then? What year is that?

A. That is for the year 1923.

Q. Have you any record that shows an actual increase in calls completed because of that change?

A. Yes, we have from time to time revised the loads which we ask our force to carry, and the loads at the present time, due to various improvements, is considerably higher than it was a number of years ago, as we are constantly making studies of the possible loads, and from time to time the loads

which we specify as the proper loads are revised to take care of conditions of this kind.

Q. Is it possible in any of the financial records of any of these companies to show a saving in the payroll on account of this particular change, a smaller number of operators handling a given number of calls or doing the work of the local offices or anything of that kind?

A. The records would not be kept in any way to show or to isolate anything of that kind. We have from time to time in-
[fol. 9312] vestigated and as a matter of fact the operator loads taking care of the changed conditions are higher now than they have been in the past.

Q. When was this particular change put into effect? I am talking about this tinsel cord now?

A. The first cords were standardized in the general engineering circular that was sent out in 1912 and certain improvements have been made from time to time since that time in these cords.

Q. Now before that they used this steel cord, didn't they?

A. Before that they had used a steel cord, not all of the time; they had attempted to use a tinsel cord but it was found it could not be maintained and they would have to go back to steel cords, and the tinsel cord that was found to be advantageous from a maintenance and operating point of view was the one that was standardized in 1912.

Q. That was an improvement over the old idea that had been used for awhile and then abandoned for this steel cord and then they came back to the tinsel in some improved form; is that correct?

A. Yes, sir.

Q. And the steel cord was experimentally introduced and was found to be unsatisfactory after several years of use?

A. It was found *ot* be unsatisfactory from the operating point of view, and the tinsel cord which was superior both from operating and maintenance standpoint was continued and substituted for it.

Q. Now you have records of the loading—is that the term
[fol. 9313] you use—for different periods, have you?

A. No, we do not have records of that kind because we reduce the calls to units and by revision of the coefficients we take care of various changes in the art; so that we do not have records showing the number of calls per operator during various periods.

Q. Then there isn't any record in existence by which you

can show that this seven million dollar saving was ever realized, is there?

A. Yes, we have the present loads which are based on the work time comprehended by the present tinsel cord. As I stated, the work time was one second longer when we had the steel cord.

Q. Now the present load is what?

A. 230 units.

Q. What was the load in 1911?

A. I just stated that that is taken care of—we are keeping 230 units as the constant load and changing various coefficients as we find that conditions change in the method of handling calls. If we get a method which reduces the amount of time required to handle the call, or a piece of equipment which reduces the amount of time required to handle the call, we make some revision in our coefficients which takes care of those different elements. Now we do not do that each time that some one thing is done in the art. We do it periodically, because there are, in order to improve service, methods put in which may result in lengthening the work time on the part of the operators. There are at other times equipment or methods put in which shorten the work time. So that it is impossible to isolate any one element and [fol. 9314] by the records show during a period of years the effect of that one change.

Q. Well, you have undertaken to say that you have saved this company, or these Associated Companies, $7,000,000.00 by a particular change, and I want you to either tell me that you haven't any record which substantiates that claim or show me what that record is.

A. I testified to that——

Q. You have testified, but I want to know if you have a record which backs up your testimony?

A. I have the facts which back up my testimony that the work time on the steel cord was one second longer than it is with the tinsel cord.

Q. Now how did you determine that?

A. By actual stop-watch observations.

Q. Over a great many different operations?

A. Over a great many different observations, and on the part of the work of a great many different operators in a number of different offices.

Q. Now, as to that, you did not have anything to consider expect the difference in the cords, did you? Any kind of an

operator could make better time with the new cords; that is correct, is it?

A. That is true, yes, sir.

Q. But every operator would not save exactly this one second, I suppose, on every call?

A. No, with any of these we would arrive at an average figure on the part of a number of operators.

Q. And because it takes only ten seconds to make a con- [fol. 9315] nection which, before the adoption of this particular piece of apparatus, took 11 seconds, that is the basis on which you figure this $7,000,000.00?

A. Yes, sir.

Q. You are not prepared to say that there was ever realized any actual work done or money saved by these companies?

A. I have stated it was saved.

Q. I have asked you to show us a record which will establish that fact; we haven't anything but your word for it, Mr. Allen, and I do not believe you know enough about the A. T. & T. organization or system to say of your own knowledge. Now I want to know where you got it?

A. We have from time to time equated for the various changes——

Q. Now you say you have done; let us see the record of what you have done. You must have a record some place; where is it?

A. Our records on things of that kind are not kept isolated in any way so that it would show on the records.

Q. Now let us get away from this and let us have you tell us or show us what record you have of an improvement in efficiency in the calling rate or the load, as you call it, or whatever it is, which will be explained by this improvement and any others that you may see fit to add to it in order to make a showing. How did you get this 230 that you have now? What does that mean, this 230 loading that you talk about?

A. That is the number of units which we have found that the average experienced operator can handle——

Q. What is the unit that you talk about?

A. It is an arbitrary unit established for the handling of [fol. 9316] the telephone business.

Q. Is it a call?

A. It is a unit. No, it is not a call.

Q. What does it mean? What do you mean by unit? A unit

can mean so many things. The unit with which you deal is a call, isn't it?

A. It is not necessarily, no.

Q. What is it then?

A. A unit is the 1/230 of the amount of work which the operator can do in an hour.

Q. Isn't that measured in calls?

A. No. We happen to have one type of board where the calls—part of the calls on that board happen to be the same as a unit at the present time, although any change in the art might result in the fact that we would not have any type of calls which would be exactly a unit. A unit, as I say, is 1/230 of the work that the average experienced operator can do in an hour.

Q. Isn't there at the basis of that the number of calls that the operator can actually put through in an hour?

A. We have many different kinds of calls and the very idea of the unit is to get the thing on a common basis so that we can have some common term. If we held it in terms of calls it would be defeating the very purpose of the unit, which is to reduce the kinds of calls to one common term.

Q. Let me ask you to do this; let me ask you to explain on this record the method by which you determine that the amount of business that can be handled by the various operators has been increased to any definite degree between [fol. 9317] 1910 and 1923. Do that in any way that you can without talking about any coefficients. I don't understand those.

A. Well, the actual number of calls on the average board when we take care of——

Q. What do you mean by the average board?

A. Well we have different kinds of switchboards. We have switchboard positions where we handle pay-station calls; we have switchboard positions where we handle flat rate calls; we have switchboard positions where we handle message rate, message rate registered or message rate ticket calls, so that taking any one of those boards, or taking the board as an average, the number of calls per hour that the average operator is handling at the present time is more than it was in 1910.

Q. Now is that your answer to my question?

A. Yes.

Q. How much was it in 1910?

A. I haven't the definite figure with me on that.

Q. Have you them any place?

A. I have from time to time in the past had figures of that kind but I haven't any figures now. I don't know whether we could secure figures as far back as 1910 or not.

Q. That is the year, as I understand it—the reason I asked about 1910—or let's say 1911—you have said that in 1912 the change in the switchboard cords was effected?

A. No, it was started then.

Q. There has been a gradual improvement since that time?

A. Yes, sir.

Q. You commenced to effect and realize this saving, didn't [fol. 9318] you, at this time? Now you mean to say that there has been a saving of $7,000,000.00 in operators wages over this system as a whole in the year 1923? That is what we are to understand by what you say on this point; is that correct?

A. Yes, sir.

Q. Do you mean to say that the operators payrolls are $7,000,000.00 less than they would have been if it had not been for that improvement?

A. I said that, yes, sir.

Q. You do not claim that that is a saving effected by the traffic department, do you?

A. Yes, sir, I give it as a saving effected by the General Staff.

Q. I understood that you were talking about the savings effected by the traffic department? I was mistaken in that?

A. No, I do not think you are mistaken. I explained at the time you asked me that that this cord was developed in cooperation between the traffic men who set up the requirements and the technical men who carried them out, and the result of that was the improved cord which effected these savings in payroll.

Q. Let me ask you this, do you mean to say, as a matter of fact, upon your personal knowledge, that the Associated Companies are employing fewer operators than they would have employed except for this cord, to the extent of $7,000,000.00 per year?

A. Yes, sir.

Q. How much does an operator get in wages? The price varies, does it not?

A. Yes, sir.

Q. Did you make any study of payrolls of the different parts of the country?

A. Not so that I would have any definite figures in my [fol. 9319] head as to what operators get in different parts of the country. I have data on that which we use, but nothing that I could carry in my head.

Q. Do they get as much as a thousand dollars a year?

A. In some cases.

Q. Down as low as how much where they are employed eight hours a day, as you say they are according to these standard time sheets?

A. Oh, I suppose 600.

Q. 600 to a thousand is about the range of their salaries, is it?

A. There are cases where it would be more than a thousand; the range might be 600 to 1200.

Q. That means then that there are 8000 less operators in service on the Bell System in 1923 than there would have been if it had not been for this change in cords; is that correct?

A. That would be approximately correct.

Q. Now of course you have no record upon which you can base that statement? You simply say that because you know by investigation that they are making their calls in 10 seconds instead of 11, as they used to do?

A. And I know that they are handling more calls on the average per hour now than they were in the period preceding the use of these cords.

Q. But you are still not able to tell us how many calls per hour they were handling before they commenced the use of these cords?

A. I haven't any data on that now.

Q. We will have to take your word for it. Al-right. Now [fol. 9320] you testified also to a saving of 3½ million dollars on the ringing, the machine ringing on the B board, didn't you?

A. Yes, sir.

Q. Now, how is that saving effected?

A. In the office where we have machine ringing on B boards there are 18,260,000 calls handled per day; and the coefficient which applies to boards where the calls are handled and rung with manual ringing is .742; on calls where the calls are handled by machine the coefficient is .591; the saving per call is therefore .15. So that on these

over 18 million calls we save .15 units of work per call; that amounts to a saving in units per day of 2,700,000. And applying to that the cost per thousand units of $3.92, which was the average cost in offices having machine ringing for the period from February, 1923, to January, 1924, we get a saving per day of $10,737.00, and reducing that to a yearly basis, the factor which we found reduces daily traffic to a yearly basis, allowing for a smaller amount of traffic on Sundays, is 330, so that applying this would reduce the savings to a yearly basis and give the figure of $3,543,000.00 as the saving per year due to the machine ringing on the B boards as opposed to manual ringing B boards.

Q. Why did you take February, 1923, as your starting point?

A. I took the period of one year previous to the time that I made up these figures as being representative figures. And at that time, January, 1924, was the only money that was available in 1924, so I went back to get a 12 months period as being a representative period. It is not affected very [fol. 9321] materially if I take all of the year 1923.

Q. Now when was this machine ringing on the B boards put into effect?

A. It has been put on at various times, starting in April, 1911, and has been gradually extended through the System until at the present time, when it is in rather general use on B boards.

Q. It has been installed on different boards as occasion for rehabilitation came up or putting in new boards, has it?

A. Or when work was being done in the office so that it was economical to do the job.

Q. There hasn't been any general making over to put this in effect, but when it was convenient to do it it has been done, is that correct?

A. In some cases on large B boards it was economical to do it as a job by itself. It was worked out in the most economical way as to time of accomplishment.

Q. Just exactly what difference does this improvement make in the operation, in the process of putting through a call?

A. It saves the operator the actual work of ringing at the time that the call has been put up, and then devoting enough of her time to watch the signals and to give repeated rings on such calls as are slow in answering. It not only saves

her the actual work of ringing, but the attention which she has to give to the key shelf in order to give the necessary supplemental ringing.

Q. That is, she makes the connection and drops the matter and goes to something else immediately? That is, she does [fol. 9322] not have to make the extra movement necessary to ring the bell at the called person's station?

A. Both on the original and such supplementary ringing as might be necessary, yes.

Q. Has that principle also been applied to A boards?

A. Under such conditions as it proved in we have extended it to A boards; of course you can see on the B board, where the load would possibly average something over 400 calls, that the amount of saving would be very much larger than it would be on an A board, where the number of calls would be possibly about half that; so that it would be much more difficult to prove in ringing on A boards than it would be on B boards.

Q. Is there a difference in the calling rate on A boards and B boards?

A. We do not have anything we call a calling rate on B boards. There is a decided difference in the number of calls that an A operator can handle and a B operator can handle. I should say, roughly, it would be two to one; that is, the B operator can handle twice as many calls as the A operator; she does not have to deal with subscribers or repeat back and has to only handle one cord as opposed to two cords the A operator has to handle.

Q. Of course this machine ringing calls for additional equipment, something to be added to the B board, doesn't it?

A. Yes.

Q. Have you measured that against your 3½ million saving?

A. Yes, I did. I have given you the saving in the operators wages and I have not put in any saving for the B [fol. 9323] positions which are saved at the same time with several operators. The saving in B positions practically offsets the more expensive machine ringing trunk, so that the figure I have given you is the net figure, which would be a complete saving to the companies.

Q. That is you say that there would be a proportionate saving in the number of operators and positions needed and therefore that much less equipment would be required and

the amount of equipment you would save would equal in cost the cost of the machine ringing trunks that you would have to put in; is that right?

A. Yes, there would be the saving in switchboard positions and in subscriber's multiple. In fact, I think it is considerably more than offset—considerably more than offsets the added cost of the machine ringing trunks.

Q. Have you any figures on that?

A. Yes, I have had figures on that on which I based that conclusion.

Q. What were those figures?

A. I haven't those figures with me.

Q. How would you figure that out applying it to the whole System? You would have to have some basis of switchboard positions to offset against this other expense, wouldn't you?

A. Well, we have figured from time to time the number of switchboard positions that would be saved by the introduction of machine ringing trunks, so that it would be necessary to figure anything of that kind for every office in the System in order to know in general——

Q. Well, now, have you in mind any central office where [fol. 9324] you have put in machine ringing for the B board where you have done away with any positions?

A. We would either reduce the number of positions or would have additional positions for growth.

Q. Now get my question. Have you in mind any situation or any central office where you have reduced the number of stations because of putting in machine ringing on the B board—the number of positions, I should say?

A. Yes, we reduced the number of positions occupied in the busy hour in every board where we put in the machine ringing trunks.

Q. Just name us one board where that is done and where you have actually put any equipment out of position because you have done away with those stations or positions?

A. In the majority of cases it would be providing equipment——

Q. Just say yes or no. Can you name such a place, any place where you have put any switchboard equipment out of use because of this improvement?

A. I am not familiar with that.

Q. You don't know of any such place, do you?

A. No; I know that there are such places but I haven't any particular places in mind.

Q. How do you know that there are now, if you haven't any particular places in mind?

A. Because I know that the introduction of machine ringing reduces the number of positions required.

Q. It reduces the requirements, but do you know of any [fol. 9325] cases where it has reduced the number of positions and the amount of equipment provided for those positions set?

A. No, I haven't.

Q. You haven't any such knowledge?

A. No, not by name.

Q. Will you tell us any way in which this saving you have been talking about because of this machine ringing has actually been realized as shown by any record of your company or these Associated Companies?

A. Yes; I have given you the standard coefficient from the actual circulars which I put in as an exhibit here; given the coefficient applying to a board with manual ringing and given the coefficient applying to a board with the machine ringing, and the difference between those coefficients on the average would vary for different studies, but it would be on the average this .15, and the actual operators provided at the switchboard are provided on the basis of the units either with or without machine ringing, so that there is no question at all about the saving being accomplished.

Q. And you say that the net gain of the Associated Companies in the aggregate is 3½ million dollars per year because of this?

A. Yes.

Q. You have not determined that by comparing payrolls, one year with another? You have determined that entirely, so far as you are concerned, by determining the result of your time studies on the making of calls so as to establish these coefficients that you have used and applying them to the total amount of business done in a certain period; is [fol. 9326] that correct?

A. That is not correct.

Q. Then what is the fact? What have you done besides that?

A. I don't know whether I can make it any clearer now or not. I have stated that we have definite coefficients for the

manual board which are a matter of record in the exhibits which have been entered in this case, and another set-up applying to the machine ringing boards, and that the difference between those two amounts is .15 units per call; and that those are the coefficients—nothing theoretical, nothing at all; they are actually in use by all of the Associated Companies in laying out their B boards.

Q. Do you know of your own knowledge or from any record, that these Associated Companies actually employed fewer switchboard operators because of this change than they did before the change was made?

A. Yes.

Q. You actually know that?

A. Yes, sir.

Q. From what source do you get that information?

A. We have standard reports which show the load or number of units.

Q. I am not talking about loads or units. I am talking about operators. Have you any record or have you ever seen a statement which would show you were employing fewer operators because of any of these changes you are talking about?

A. Yes, our standard reports, a copy of which is in the circulars which I introduced as an exhibit, would do that.

Q. Will you show me which of these exhibits shows that? [fol. 9327] I think those are all of your exhibits. I am not familiar enough with them to say definitely.

A. Exhibit No. 7, Form No. E-43, shows against Item 22 the current peg count load on B boards. This is a standard report, and from looking at this report we have the definite loads that are carried, and whether that load remains practically the same on boards having machine ringing and manual ringing would show whether the saving is actually being made as called for by the coefficients, and the reports for the offices in which the machine ringing has been installed do show that this saving is actually being made.

Q. Now where is the record among those exhibits which you have introduced which shows the number of operators to be less than it was before this was installed?

A. Mr. McConnaughey, the record would not—these records that we have are kept entirely with the idea of handling our business in the most economical manner. It would not be kept to show this particular point in the exact manner that you are asking for.

Q. Why didn't you say that and save us all this time? You promised to give me——

A. I just outlined the way that the saving which I put in here is definitely shown,——

Q. I asked you if you had——

Mr. Burr: Oh, let him finish, if you please.

The Witness: In my testimony, and I at no time said that a certain number of operators had been saved by this means.

Q. Oh, yes, you did.

A. If our records had been kept in a way that would show [fol. 9328] the exact number of operators I would be glad to quote it in that way, but I have given this information——

Q. Well, what is it?

Mr. Burr: Let him finish.

Mr. McConnaughey: He never does finish. That is the trouble.

The Witness: I have given this information from the records as they are available.

Q. Yes, I understand you. I asked you to show me on the record where the number of operators was less and you did not do that. That is what I am complaining about. If you cannot, just say so and save a lot of time and record and a lot of disappointment for me. Mr. Allen, you total the savings in connection with switchboard development at 16 million. That is on page 468. Just exactly what do you cover by that? You include this tinsel cord and the machine ringing and the prepay coin boxes?

A. Yes, sir.

Q. Now, something besides that?

A. Yes, I have included overlap ringing, improved toll operating method generally known as overlap ringing, which amounted to $2,600,000.00. I included the introduction of the audible ringing set which amounted to $1,500,000.00.

Q. That makes the additional $4,000,000, does it? Is that correct, that makes the additional four million?

A. Yes, sir.

Q. Now you have figured the savings on these other things in the same way that you have what you have already testi-

[fol. 9329] fied to; that is, by this—well, no, this pre-pay coin box would not work the same way.

A. The pre-pay coin box is a matter that would be worked out in practically the same method as the savings through machine ringing trunks; that is, we have definite coefficients applying to the post-pay and definite coefficients applying to the pre-pay to get the saving per call due to the change, and by applying that to the number of calls get the units saved. The same is true of the audible ringing, which is the result of studies which were made at the time we were studying that subject, in which we found the percentage saving in A operators work time which could be brought out by the introduction of that method.

Q. Well, give us the detail on the audible ringing; first, will you tell us just what that audible ringing is? I have forgotten.

A. The audible ringing signal is a method whereby we arrange to have a tone which is given to the calling subscriber that lets him know that the called station is being rung. By the introduction of that we abolished the previous practice of the operator at stated intervals going back in on the line and giving what we term voluntary supervision. The phrase she used I think was "I am ringing the party". If the operator does not have to watch the call after she has them put up and give these reports at stated intervals she can use that time to handle other calls, and by that means we were able to increase the loads and save in the number of operators required.

Q. Does that apply to both A and B boards?

[fol. 9330] A. No, we have applied it entirely to the A boards.

Q. To the A boards?

A. That is, it is given on calls completed to the B boards, but the B operator does not listen in on connections or give any reports to subscribers so that the introduction of the audible signal had no effect on the B operator.

Q. Do calls terminated on both A and B boards give this audible signal to the subscriber?

A. It depends entirely on the plant. In some cities we do give them on calls to both the A and the B board, and in other cities where there are a very small number of calls completed on the A board, it has not been found necessary, both due to the fact that there is a very small number of

calls and due to the fact that the answering time is shorter on those calls. So that it is a matter of study in each city to determine whether we put it in on the A calls and the trunked calls or not.

Q. It is a matter of economy to the company whether you put it in or not?

A. Yes, it is a matter of study to see whether it proves in.

Q. Proves in?

A. Yes.

Q. Go on and state how you arrived at this figure?

A. From the records which we have of cities where this audible ringing signal is in use we find that there are 59,900,000 units handled on A boards on calls with the audible ringing signal. As a result of our studies at the time this signal was introduced we found——

Q. When was that, by the way?

[fol. 9331] A. The study was made in a number of cities from 1910 to 1916. In 1910 this use of the audible ringing signal was standardized for what we term our No. 1 C switchboard, and as a result of further study in 1916 it was standardized for use in multi-office cities, and as I was stating, as a result of those studies we found that there was a saving of three per cent due to the introduction of this signal. This results in a reduction of 8800 operator hours per day on the A boards having this audible ringing signal, and at the average cost per employ hour of 52.6 cents, it results in a saving of $1,527,000.00 per year.

Q. Now, in these cities that had the 59,950,000 calls, were those just the calls that were completed on the A board?

A. Those are units on which the audible ringing signal was used—no, a great many of those calls—a majority of them go to a B board for completion, because on those calls, as I stated, the audible ringing signal is given but the saving is entirely to the A operator, as we do not ask the B operator to give any voluntary supervision. The saving is all in A operators.

Q. You have not discriminated between the A and B calls in that number of 59,950,000; you have taken all of the calls in the exchange?

A. No, we have only taken the calls on which the audible ringing system applied because at certain offices, as I stated before, we do not have the audible ringing system on the

calls that are completed on the A board, and in those offices only the trunked calls or units resulting from trunked calls are used in our computation.

[fol. 9332] Q. You have made that separation, have you?

A. Yes, sir.

Q. Well, now, this method of figuring assumes that every operator is working to capacity, does it not?

A. Well, it assumes that the operators are working to the same capacity before and after the introduction of these savings; that is, we are doing the best we can with one method and when we get an improved method we do the best we can there, and find that we are able to do a certain percentage better.

Q. I understand that this method of reducing to a common loading figure accomplishes that end; that is, it assumes before and after that every operator was working to full capacity, doesn't it?

A. I don't know just exactly what you mean by full capacity.

Q. Doing all she can do; she is doing a reasonable hour's work each hour?

A. I do not know that I would want to say——

Q. How do you make sure?

A. No, I say I would not want to be misunderstood, that we were making the operator do all she can. We are having her do a reasonable hour's work.

Q. Now let us see how you get at the saving; what was the other 2½ million saving?

A. Overlap ringing.

Q. Yes, the overlap ringing?

A. As a result of our——

Q. That is on the toll boards only?

A. Yes, as a result of studies which have been made on [fol. 9333] that method of handling toll calls we have found that a saving of 10 per cent in the work of the operator results from the introduction of this method, and that applies to $26,250,000.00 per year, which is the wages of the toll operators on the out toll boards, to which this new method applies, and by applying the 10 per cent to that we get a saving of $2,600,000.00 per year, due to the introduction of the improved method.

Q. Now, did you describe that improved method? I do not recall that you did, in your direct testimony?

A. No, I did not.

Q. Just what do you mean by that, in a few words, so that we can identify it?

A. That is a method whereby the operating is changed so that the operator rings at the terminating end, announces "ringing", when she rings the called person. The operator at the originating end then calls the calling party and by timing those rings properly we get the calling and called parties at the telephone with less wait at either end, which saves the time of the subscribers and also saves the time of the operators.

Now there is a considerable additional saving in the toll plant and I had not introduced any figure as to just what that is, but there would be, in addition to the saving in operators time, a considerable saving by the release of the toll plant, which could be used for additional business.

Q. Now that is entirely a matter of method and calls for no new apparatus?

A. It is entirely a matter of method.

Q. Now these things that you have detailed are items as [fol. 9334] to which your department has determined in the study of results, which is one of your functions, that these savings have been effected; that is true, is it?

A. That is true. There are many other savings, but these are typical ones that lend themselves more readily to valuation due to the fact that we have made definite studies at the time they were put in and know exactly what the per cent saving is resulting from that.

Q. Well, now, there are a great many other items you have referred to now and generally which you say are the basis of claims of savings that have been effected in the operation of the traffic department; that is correct, is it not?

A. Yes, these have resulted in savings in the expense of operation throughout the Associated Companies.

Q. You stated, I think, in your direct testimony, that this traffic department of the General Staff was organized in its present form about 1909; is that correct?

A. No.

Q. Was there a statement of that kind made?

A. I do not remember making any statements in regard to the time this department was organized. I think I stated that I entered the department about August, 1910.

Q. That is not important, but I thought you had made some such statement as that?

A. No, sir.

Q. Now, in the year 1923 I think you state in one of your calculations there that the average hourly rate for operators was 52.6 cents; is that correct?

A. The average pay, weighted for the necessary supervisory time and rest and lunch room time. I figured the witchboard operators hours saved and, as you brought out [fol. 9335] earlier this afternoon, there are floor supervisors, which vary directly with the operators. Instead of calculating how many of their hours are saved, I weighted the added cost of those supervisors into the cost per hour and then we had such a figure available the cost per hour weighted for supervisory time, so that to simplify the operation I used that. I figured the average cost per employee hour for the system without being weighted for supervisory time or rest and lunch time was about 43 cents for the year 1923.

Q. That 43 cents is the actual hour rate upon which the pay check is figured, is that correct?

A. But in saving operators you save supervisors, and for convenience in figuring I weighted that into that figure.

Q. Is that 43 cents per hour the rate for operators in the year 1923? Is that the year you are speaking of?

A. Yes.

Q. What was the company paying or what was being paid to operators in the year 1910?

A. Cost per employe hour I don't know as I can give it to you for 1910. I have the cost in amount of about 1912 or '13. Pre-war costs were about 19 cents.

Q. And the increase between 1912 and '13 is the difference between 19 and 43; that is correct is it?

A. That is correct.

Q. Have the savings that have been effected by any of the improvements that you know of that have been made by the General Staff in the way of operators time kept pace [fol. 9336] with the increase in the wage scales?

A. I don't think I understand that question.

(Question read.)

Q. Do you understand that?

A. No, I can't say that I do.

Q. Have they been sufficient to overcome the increase in the rate of wages?

A. No, the cost per thousand units has gone up. It is higher now that it was in pre-war times.

Q. Have you any figures on that; cost per thousand units, is that the way you measure it?

A. I haven't any definite figure on that.

Q. Have you made any studies of the cost of operating in the traffic department based on the difference in the wage scales?

A. Yes; if we reduce the cost per thousand units at the present time, that is during 1923 and 1924, to the wage levels as they existed in 1912 and '13 the cost per thousand units is lower now than it was at that time.

Q. How much lower?

A. Well, it varies; I would say in the neighborhood of 15 per cent lower; I am saying adjusting to the 19 cent wage—if we had that now we would be operating about 15 per cent more efficiently than we were in 1913.

Q. Is that answer confined strictly to the operating expense, the traffic operating expense, I mean?

A. Yes, that is all I am referring to.

Q. That is all you are referring to?

[fol. 9337] A. Yes, that is all the figures that I am familiar with as definitely as I should be to answer that question.

Q. What is the cost per thousand units at the present time?

A. It is running about $4.00.

Q. What does a thousand units represent? Is that the same unit you were talking about awhile ago?

A. Yes, sir.

Q. 230 per hour?

A. Always when I refer to units I am talking about the same unit.

Q. That is the purpose of it, so that you can always be talking about the same thing, isn't it?

A. Yes.

Q. $4.00 per thousand, is that correct?

A. That is approximate; I haven't the exact figure with me.

Q. Can you get us the exact figure?

A. Well, I haven't any such figure with me.

Q. The question is, can you get it for us and supply it?

Mr. Burr: Do you want that for the system as a whole or for Ohio?

Mr. McConnaughey: I am interested in Ohio.

Mr. Burr: We can, and will be glad to give it to you for Ohio if you wont bother Mr. Allen to come back with it.

Mr. McConnaughey: Will you carry it back to 1912?

Mr. Burr: We cannot tell you as we sit here how far back our records go.

[fol. 9338] Q. You have this as a amtter of record, haven't you, in your files?

A. It all depends on what—

Q. You have used 43 cents and 19 cents in comparison; now you must have a record of that some place; that covers the system, as I understand it, and I would like to have that, as well as the figures for Ohio, if you can. Can't you get that and send it in?

A. I will ask the people in New York whether they want to give that to you or not. That is more or less of a confidential figure that we would not care particularly to have given out in general unless it has some very necessary use.

Q. I do not understand you when you say that anything about that company is a confidential figure that has to do with its operating results, and I wont accept that as an answer to my request. I am going to ask the Commission to ask you to produce your records upon that proposition.

A. I will try to get that figure if I can get it for you in New York. It will result in some work going over records and averaging them up.

Q. I assumed that you had it because you used it very readily a moment ago. You compared your 43 cents with your 19 without any particular calculation and I assumed that you had it in your files.

A. I qualified that as approximate. There would probably be fractions or variations. I was giving you the very best I had.

Q. Now you do the best you can with that and send it on, wont you?

(No reply.)

Mr. Burr: I think Mr. Allen's statement that the figures [fol. 9339] are more or less of a confidential nature is a good reason and ought not to be misunderstood. If I correctly understand the situation, the computation which the gentlemen on the other side are asking for would require the pro-

duction of wage rates and levels of other companies than The Ohio Bell Telephone Company and to that extent it seems to me that the information is of a confidential character. We haven't any desire to retard the hearing or to prevent the other side from having the information unless it does go to that extent. And I would suggest Mr. Allen look over the matter when he gets home and furnish such information as he can consistently, and if that does not satisfy Mr. McConnaughey and the other gentlemen we will take the matter up further.

The Witness: I think we might—if I can have information as to what use is going to be made of it—I don't know as it would be at all helpful to companies in Ohio to have general wage data put in the papers in case they happen to be either lower or higher than the city in which they were used. It might cause us serious complications.

Mr. Burr: I think the point is well taken and should not be misunderstood.

Mr. McConnaughey: Alright.

Q. Now, Mr. Allen, a few more questions about the LaCrosse switchboard about which you testified in your direct examination. You have substantially the same sort of switchboard at Wilmington, Delaware, as I understand it?

[fol. 9340] A. Yes, we have a board in Wilmington, Delaware, that gives about the same operating conditions.

Q. But in a different way?

A. Some of the equipment for bringing about those conditions is quite dissimilar, but the operating conditions to which I was referring are rather similar.

Q. Are the same, yes—Now on page 462 you were referring to features of the switchboard, of the LaCrosse board, that you were using in different places. You stated, "We are using audible ringing signal, the machine ringing on A boards; we are using multiple line lamps, using automatic peg counts; we are using practically all of the features on those boards with the exception of what is termed—"; then you were interrupted and I cannot find that you ever completed that answer.

A. The socalled dark key shelf and the instantaneous disconnect. Those two features we are not using on any of the boards that we have installed; that is, we have them on certain boards that we have purchased.

Q. Dark key shelf, what is that?

A. That is an arrangement whereby the signals on the key shelf during the period when the calling subscriber is waiting for the called subscriber are both out, which makes it impossible for the operator to know whether the called party has answered.

Q. Is that a feature of the LaCrosse board?

A. Yes.

Q. How does that compare with the ordinary board in that respect?

A. On the ordinary board the signal on the calling cord [fol. 9341] burns, is lighted, showing the operator whether or not the called station has answered. That feature we have found no advantage, particularly in and it makes it impossible for the operator to time calls. In general on our board we have some AB toll calls which make it necessary for the operator to know when the called station answers. And further we consider it good operating practice, if a subscriber waits too long, for the operator to give a "No answer" rather than to leave the subscriber hanging indefinitely—leaving the operator without means to know when a "no answer" should be given.

Q. You have not recommended the automatic listening——

A. The automatic disconnect.

Q. Disconnect I should say.

A. Yes.

Q. What is that?

A. That is a circuit arrangement whereby when the calling subscriber hangs up his receiver his line is available immediately to an incoming call without the operator disconnecting the cord. It is possibly a misnomer to call it an instantaneous disconnect because the disconnect work of the operator has to be exactly the same with or without that feature. It simply means that the line is available for an incoming call on the average of two or three seconds faster.

Q. Why don't you use that?

A. We have not found that the advantages gained were enough to pay for the introduction of the necessary relays in the circuit to accomplish the disconnection.

Q. Now the features which assist the operator in expedit- [fol. 9342] ing the received calls on the LaCrosse board or the Wilmington board are not at all peculiar to those boards; as you have explained, they are a combination of well-known elements that you have the right to use and do use in different points and at different places; is that correct?

A. That is correct.

Q. The mechanical distribution of calls, which is one of the features of that board, is also old in principle, is it not?

A. That is in use in Wilmington and has been since 1916 when that Wilmington board was installed. I think the principles are still older than that.

Q. Was that installed at Wilmington by the Bell Company?

A. Yes.

Q. Now is that mechanical distribution of calls a feature of any of the boards in Ohio?

A. I think not.

Q. It is comparativey rate in practice any place, isn't it?

A. We have not been able to find any place where it was economical to put it in. I think it would be—I would expect it to be very rare.

Q. Can you name any other place where it is in use excepting at Wilmington and LaCrosse?

A. Yes, we have it on a board in Newark, New Jersey. It is what is called the Branch Brook office in the City of Newark.

Q. Those are the only three that you know of, is that correct?

A. Yes, sir.

Q. Do you know anything about The North Electric Company's auto-manual equipment?

A. Yes; I might correct my last statement. There is a distribution on the board in Lima which I have seen, yes. [fol. 9343] That board has automatic distribution. I would mention one other board too. There is a board in Defiance, Ohio. I don't know exactly what company is operating that. That has an automatic distribution. The system was installed by the Automatic Electric Company. I personally made a study on that board in 1917. It is a very small board and not a very efficient distribution scheme.

Q. Now you stated, on page 513, that the average time it requires to get through a call over the LaCrosse switchboard was seven seconds. I think, as I remember the figure, it was about 7 seconds; that is correct, is it?

A. I have looked — up—when I got back I looked up the definite study that was made on a similar study and I find I should have said 8 seconds, that the actual work time was 8 seconds.

Q. On the LaCrosse board?

A. Yes; I think I was thinking of the coefficient when I quoted that. The coefficient is about .7 on that board and the work time per call is about 8 seconds.

Q. Now in your answer you said in verifying that you found the figure on a similar board was that, as I understand you?

A. Yes sir.

Q. What was that similar board?

A. Warren, Ohio.

Q. That is not then the actual figure for the LaCrosse board?

A. No, we haven't a definite enough figure for the LaCrosse board that I would quote it as having been made on [fol. 9344] the LaCrosse board, although I did make some observation there to justify me in assuming that the work time would be the same there as in the other boards, such as Warren, where we had made intensive studies.

Q. What you intended to say in your direct examination was 8 seconds instead of 7?

A. Yes, I should have said 8 seconds.

Mr. Burr: What is the page, if you please?

Mr. McConnaughey: 513, at the bottom of the page.

Q. Tell us about the Warren board; is that substantially the same as the LaCrosse board?

A. As far as the operation is concerned it is the same. The Warren board is a small board and they get the distribution on it by actually providing a multiple of the line lamps throughout the boards which gets practically the same conditions as far as the operator is concerned as in Warren, where the calls are distributed to line lamps by the mechanical distribution.

Q. You mean at LaCrosse?

A. Yes, at LaCrosse; I should have said LaCrosse.

Q. Well, now, in that connection you mention the work time on the No. 1 C board in Youngstown as about 8½ seconds; that is correct, is it not?

A. Yes, I verified that. That is actually 8.7.

Q. I said about 8½. Now in both of these cases you refer to the work time; is that the time during which the operator is actually engaged in handling the call?

A. Yes, sir.

[fol. 9345] Q. It does not include the time that the subscriber consumes in lifting the receiver—does that include

the time between when the subscriber lifts his receiver and lights his lamp and the operator connects with him?

A. No, that is entirely the work time of the operator; it has nothing to do with the subscriber.

Q. There would be a little additional time in connection with the call during which the operator was getting in on the line, wouldn't there?

A. Yes, and there would be a little additional time on the average before she started to get in on the line. A man takes his receiver off and there will always be some interval before the operator sights it and starts for it.

Q. And that time is not included in with this 8 seconds of this 8.7?

A. No, sir, it is entirely the operator's work time.

Q. Now is there any difference in the time between the operator's lifting the receiver and the operator getting in —the subscriber lifting the receiver and the operator getting in on the line at LaCrosse or at Warren and at Youngstown?

A. In all the load figures and the work time figures which I am quoting to you, we are assuming to keep those intervals the same. That is, we increase the operator's load and in doing so we base operating—what we would consider the standard operating load on the same speed of answer as you might call it, that is the time from the time the subscriber takes his receiver off and gets an answer—we are basing [fol. 9346] the loads or giving the same speed of answer on all these different types of boards in connection with the work time coefficients which I have mentioned.

Q. What is the standard speed of answer?

A. Why just what do you——

Q. You used the term. I want to know what you mean by it.

A. No, I do not think I used that term.

Q. I think you did in this last answer.

A. I think we based it on the same speed of answer. I don't think I used any term such as standard.

Q. Make it the same speed of answer.

A. I will take any figure you give.

Q. What do you mean by speed of answer?

A. That is the time from when the subscriber takes his receiver from the hook until the operator says "Number."

Q. There is no reason why they should not be the same on

a board such as at Warren and the one at Youngstown so far as the board is concerned?

A. No, sir. It is controlled entirely by the number of operators provided at the board to take care of the calls, which gets back to the question of what load you provide for the operators.

Q. Have you any work time figure for the Lima board? Do you recall the work time figure for Lima?

A. No, I do not.

Q. Or Defiance?

A. I don't recall that exactly. Defiance was very similar to the work time on the Warren board, I should say not far from the 8 seconds.

Q. Well, then if the distribution of calls on the LaCrosse [fol. 9347] switchboard effects a cutting down of the speed of answer, that is not reflected in this comparison that you make between 8 and 8.7, is it?

A. I stated that just as clearly as I could, that those figures were based absolutely on the same speed of answer on both boards.

Q. Yes, and if there is a difference in the speed of answer in favor of the LaCrosse board that is not reflected in your figures at all, is it?

A. I cannot state any plainer that there isn't any difference in speed of answer on the two boards with those two work times I have quoted. The work times I have quoted are based on exactly the same speed of answer on the two boards.

Q. That is true. Then the difference in the speed of answer, if there was a difference in the speed of answer, would not be reflected in the figures you have given at all?

A. At the time the studies were made on which these figures were quoted there was no difference in the speed of answer on the boards, as we maintained the same speed of answer for the studies on all of the different types of board.

Q. Now you are including in that the boards which you studied, which were Warren and Youngstown, is that correct?

A. In general I was including all of the different boards on which we are continually making studies.

Q. And that does not include anything about the LaCrosse board because you did not make a time study of that?

A. We made no detailed study. I made enough to confirm my opinion that conditions were the same as far as those

[fol. 9348] factors were concerned in LaCrosse as they were in the Lima board.

Q. That is, you did not make a stop-watch operation there. You simply watched them operate?

A. I made a few stop-watch observations, not enough to constitute what we consider a complete study.

Mr. Burr: You said Lima; did you mean Warren?

The Witness: Warren. I am referring to LaCrosse and Warren.

Q. I will ask you what sort of an observation you made at LaCrosse particularly now?

A. I made a number of observations. But in order to derive a figure on which we would base complete data it would be a matter of some months and we did not make such a study in LaCrosse. We simply made a study of a couple of days to determine that the operating features in LaCrosse made no difference in the problem that the operator confronted as compared with Warren where we had made a very complete study.

Commissioner Poor: We will recess until ten o'clock tomorrow morning.

Mr. Burr: Your Honors, before you recess, I should like to make one short statement. I notice from time to time there have been, and are still being, filed in this case long lists of names purporting to protest against the rates involved in this proceeding, the list being filed under the name of the State Citizens Association, or some such designation. It has come to my attention recently that these petitions are [fol. 9349] circulated by solicitors who solicit names and subscriptions at the same time and who are paid for their zeal in securing subscriptions 40 per cent of the amount that is collected by them.

In the City of Columbus it is my understanding that the promoters were arrested at the outset of this movement; that in the City of Cleveland solicitors have been requested to leave the city by the better business men of that city, and that in Marietta, and perhaps some other places, the same thing has happened.

Now, of course, protests signed by names, be they many or few, mean nothing, because of course the names have been signed without any consideration on the part of the signers whether the proposed rates involved in this case are or are not reasonable. I do not care to dignify these

protests by any further reference to them except to say that if the Commission shall at any time during the progress of this hearing desire proof of the facts which I have stated with reference to the manner in which these petitions are circulated and the basis on which the solicitors circulate them, I believe that the evidence can be produced before the Commission.

And thereupon the further hearing of this matter was adjourned to 10:00 o'clock Tuesday Morning, May 13th, 1924.

[fol. 9350] Tuesday Morning Session

May 13th, 1924.

And thereupon the further hearing of this matter was resumed, pursuant to adjournment.

Present:

Same counsel as at previous hearing, and Carl F. Shuler, on Behalf of the City of Cleveland.

And also ARCHIBALD J. ALLEN, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

Q. Your personal investigation of the LaCrosse board was confined to this one trip when you inspected it?

A. Yes, sir.

Q. When was that?

A. I think that was in December, 1922.

Q. Have you the standard or average number of calls per hour for the Youngstown board?

A. That would depend on certain features which touch the percentage of calls that would go to party lines and some elements of that kind. There isn't any one load figured—that is, the coefficients that would apply to that board would be .87; that is .87 units for a call to an indi-
[fol. 9351] vidual line, and certain modifications are made based on the percentage of calls that would go to party lines. The average load on the board assuming an average amount of party line business would probably be about 175 calls—275 calls to the hour.

Q. 275?

A. Yes.

Q. And the LaCrosse board?

A. Assuming about the same percentage of party lines there it would be about 320 busy hour.

Q. What average of party line calls do you assume there?

A. Why, I would assume, without figuring it down to an exact point—I am assuming around 20 or 25 per cent on the calls going to party lines.

Q. And what percentage trunked?

A. I am assuming no percentage of trunks. That is, those boards are ordinarily not installed in cities having much trunking.

Q. And for the Wilmington board?

A. Just about the same as for the LaCrosse board.

Q. 320?

A. About 320.

Q. And Warren?

A. The same as LaCrosse.

Q. Are there any of the elements of the LaCrosse and Wilmington boards other than the automatic ringing adaptable to facilitating calls between A and B operators or the completing of calls by B operators?

A. Well, there is very little of any connection between the operation of an A and B board. That is, I assume you could put some of these features, such as the automatic disconnect and so on, in connection with the B end of the trunked calls; I don't know of any place where that has been done or any value that you would get from it. I think [fol. 9352] the machine ringing would be the only one of any definite helpful application to the B board.

Q. And that is pretty generally adopted, isn't it, on the B board?

A. Yes, sir.

Q. How about distributing calls between the A and B boards by machine; has that been done?

A. Yes, there has been some experiment on that. I don't think that the equipment as developed for an A board would be suitable for use on a B board for that purpose. There would be some gain on the ability to distribute calls at the B end.

Q. Has that been done in any instance that you know of?

A. Yes, we have done that in connection with some of our boards. We have done it in connection with our call indicator positions where we have traffic coming in from

the machine switching offices where we have arranged for team work.

Q. Where?

A. We do it in general wherever we have more than one position; as soon as we get so that we have more than one position of traffic coming in from machine switching offices we arrange for team work between those positions so that we get the team work on the part of our B operator.

Q. By the equipment for machine distribution of calls on a B board?

A. Yes, by special equipment that has been developed to accomplish that purpose.

Q. Now you say that is pretty generally in use in your system?

A. Wherever we have machine switching offices in a city [fol. 9353] we have these positions arranged in that fashion.

Q. Name some of them where that is in use? Are there any in Ohio?

A. No. I know of none in Ohio. It is my understanding that the consolidation with machine switching offices has not been completed so that I do not know of any call indicator positions in Ohio, although there may be. I am not familiar enough with the local situation to say.

Q. Where are there any outside of Ohio?

A. Chicago, Detroit, New York, Kansas City, Omaha; various cities; a large number of cities throughout the country.

Q. Minneapolis?

A. Yes, sir.

Q. And St. Paul?

A. Minneapolis and St. Paul.

Q. I understand that on the LaCrosse switchboard the answering jacks are multiplied so that one operator can assist another without reaching over to the other positions; is that correct?

A. No; the answering jacks are multiplied in each section of the LaCrosse switchboard the same as our answering jacks are placed in all of our boards, and the operator either answers the call on an answering jack on her own position or on the adjacent position to the right or left. As far as the operator's reaching to the right or left for a call, there is nothing different on the LaCrosse board than is true in general on all boards throughout Ohio.

Q. The ability of operators to handle more calls during the busy hours means, as you have explained in connection with several of your savings, fewer A switchboard positions [fol. 9354] for a given number of lines with a given volume of traffic, doesn't it?

A. That is true.

Q. The supervisors for the smaller number of operators could be reduced at least proportionately, can they not?

A. Generally proportionately, yes, sir.

Q. Can't they sometimes be reduced even more than proportionately?

A. No, I would say that the tendency would be the other way, that it is more difficult to adjust supervisors—the smaller the force you get, the more difficult it is to arrange supervisors efficiently. That is true of most anything where we have a number of people working, that we can fit in the tours of duty and do a closer job of adjusting if we have a considerable number of people. As you reduce the number of A positions it becomes a more difficult job to provide supervisors just enough and not too many.

Q. The smaller the force of operators the fewer difficulties may be expected in hiring and training and retaining competent girls in sufficient numbers; that is true, I suppose?

A. Yes, I think in general that would be true.

Q. Whatever waste there may be in the slack time of operators who are necessary for the short peak loads periods is reduced in greater proportion than the direct reduction in the maximum number required; is that not to be expected?

A. I think that is exactly contrary to the condition. The exact opposite would be the fact.

Q. Why?

A. For the reason which I have stated just now, that the——

Q. The larger force is the more flexible?

[fol. 9355] A. It is more easy to make a careful and exact adjustment with the larger forces and with the natural flow of the traffic. We have found that to be the fact, that those schedules are more easy to adjust efficiently than when we reduce the force.

Q. On the LaCrosse switchboard the answering jacks are

more compact than the ordinary board as it is pictured in your Exhibit No. 1, are they not?

Mr. Burr: What do you mean by compact?

Mr. McConnaughey: Closer together, more in a given space, fewer jacks for the number of lines.

The Witness: Well, now, you are getting two or three elements in. That last statement, "fewer jacks for the number of lines", the answer to that is yes, but that has no relation to the compactness of the answering jacks.

Q. I see that. Now answer the first question as to the compactness?

A. No, there is nothing in connection with the LaCrosse board that makes for any difference in the arrangement of the answering jacks. The answering jacks can be arranged in 10 per strip or 20 per strip, depending on the conditions in the office; there is nothing in connection with the LaCrosse board that would have any effect on the way the answering jacks would be placed on the switchboard.

Q. Well, there are fewer answering jacks on the LaCrosse board; that was your answer, wasn't it?

A. Yes, the lines are terminated on switches, and those switches—trunks from the switches to the answering jacks, and that is the mechanical arrangement in the LaCrosse [fol. 9356] board, and the expense of providing those switches is one of the difficulties in the LaCrosse board which more than offsets the traffic saving.

Q. As you figure it?

A. As the conditions in LaCrosse definitely show.

Q. And the smaller number of answering jacks leaves more room for multiple jacks on the board, doesn't it?

A. Now you are getting onto another subject. The LaCrosse board uses more answering jack space than we ordinarily use on our board and they have less lines terminating on any one answering jack but the fact that they multiple the answering jacks throughout the board results in their using up more answering jack space than is ordinarily used on the standard board, so that you have no more space left for multiple.

Q. That element of the space occupied by the answering jacks is a thing that is controllable in the arrangement of a board on the plan of the LaCrosse board?

A. If you do not multiple the answering jacks then you

do away with one of the principal features of the LaCrosse board and save answering jack space; you could not have the answering jack space and gain the advantage which they claim for the LaCrosse board.

Q. Now, I understand your testimony to be that the effective operation of a switchboard with the elements of the LaCrosse board is not dependent on the particular device that they use there. You have got the same result at Wilmington or at Warren, Ohio, with different devices, [fol. 9357] haven't you?

A. Yes, sir.

Q. And they were devices which have been used for a long time in one way or another?

A. Yes, simply different arrangements of them.

Q. Simply a different arrangement?

A. Yes.

Q. The matter of whether or not you would recommend, or that sort of equipment would be recommended, is entirely a matter of cost?

A. Well, it is a matter not only of cost but of the conditions in the office. That is, a certain type of board is suitable in a city where the ultimate number of lines might be 1000 lines, and some other type of board is suitable where the ultimate during the life of the board might be 3000, and if you would have a large city where you would have one office having up to 10,000 lines with several offices using the large units, you would use still other types of boards; so that the condition in the city in regard to the size would be rather controlling.

Q. What is the capacity of that LaCrosse board?

A. The LaCrosse board I would say would have a capacity of possibly 8000 lines.

Q. Is that the maximum capacity?

A. It would depend entirely on how much outgoing trunking there might be. That is, if you go to a large enough city it might be that you would not have room left for any subscribers multiple. It might require all of the space above the answering jacks for out trunks. But if you are confining the question to a single office city, the LaCrosse board could go to the capacity of about 8000 lines.

[fol. 9358] Q. And it is adaptable or available for use in a multi-office city, is it not?

A. A great many of the economies of the LaCrosse board

would be lost when you introduce it into a multi-office city. Many of the features which I have enumerated for you would have no beneficial effect in the way of saving operating time on the A Board if the call had to be trunked to a B board, so that the LaCrosse board would be not nearly as efficient when in a multi-office city. The fact that it does not prove in in a single office city would, by just that much more, indicate that it would not save enough in traffic to pay for added expense in a multi-office city.

Q. The big objection to the LaCrosse board from your standpoint is the matter of cost, is it not?

A. Yes.

Q. From your investigation you do not think it proves in in any situation in connection with which you have given it consideration?

A. Yes.

Q. There are certain savings in its favor which you think are offset by equipment cost?

A. Which are more than offset. There are definite traffic savings that are more than offset by plant charges.

Q. I want to refer again for a few moments, Mr. Allen, to your Exhibits 9 and 12. You have copies of them there, haven't you?

A. Yes.

Q. Take Exhibit 9, which is the curve or chart which shows the number of calls in your typical business office at various half hour periods during the day. Tell us from that chart what is the number of calls from 12:00 o'clock midnight to 8:00 o'clock in the morning on the average?

[fol. 9359] A. Why, those calls are not shown on here, as the fact in connection with adjusting force is that we are controlled in the number of people we put on for all night by the traffic between 10:00 and 11:00, or the early morning hours. We cannot send operators home after half past ten or eleven, so that at night our force is not scheduled, and in general the time of the night operators is used in such routine work as is necessary, handling tickets or making certain routine tests of equipment or things of that kind. So that we do not keep the traffic in detail from 12:00 o'clock at night until 6:00 in the morning.

Q. Tell us what it is between 6:00 and 7:00, according to, this chart?

A. That is not shown on this chart. The curve on here

starts between 6:00 and 7:00, starts at zero without showing the number of calls there. The chart was simply drawn up to show the variation in traffic from hour to hour during the business hours of the day.

Q. During this period when your chart does not show the number of calls for this reason you were carrying, according to your Exhibit 12, six operators; that is correct, isn't it?

A. Yes, and we showed a schedule of six all night operators.

Q. Now you were carrying six of these operators all night and until 8:00 o'clock in the morning; that is correct, is it not?

A. Until 7:00 o'clock in the morning. The night operator's tour of duty is ordinarily from 10:00 in the evening to 6:00 in the morning. That is what is shown on this exhibit.

[fol. 9360] Q. Isn't it 7:30?

A. We bring additional day operators on according to the figures shown on the schedule at 7:00 o'clock and at that time they relieve the night force. That is, the night force are shown definitely as terminating their tour of duty at 6:00 o'clock in the morning.

Q. It starts with six at 7:00?

A. That is our day operators.

Q. You have six operators on in the first half hour of the day trick, don't you?

A. Yes.

Q. You do not even get seven until 7:30?

A. They are night operators. I understood you were talking about night operators.

Q. I am talking about the number of operators?

A. That is shown definitely as six operators, day operators, who are started at 7:00 and are on until 7:30, yes.

Q. And ten you take on more; at 7:30 you have seven?

A. Seven additional operators that start to work.

Q. Which makes the total number 13?

A. Yes, sir.

Q. So that up to 7:30 you have six operators?

A. Yes, sir.

Q. And from 7:30 to 8:00 you have 13 operators; that is correct, isn't it?

A. That is correct.

Q. Now from 7:00 to 8:00 o'clock what is the average number of calls according to your Exhibit 9?

A. Well I could not read the calls exactly from this. And in order to make up the schedule the exact calls each hour were used from the bigger data on which this curve was [fol. 9361] drawn. The curve was introduced entirely to show the hour to hour's variation in traffic, and on this scale where a thousand calls—on this small base, I would not attempt to read the exact calls.

Q. It was not to exceed 800 and not less than 100, according to the indication of that curve, was it?

A. The operator requirements as shown on the top line on the form are taken definitely from our standard table in traffic circular No. 117, and the operators as shown there are the requirements based on the traffic of those half hours.

Q. Yes, I know it is based on 117; but I want to find out how it is based on the number of calls. Now the number of calls during that period from 7:00 to 8:00 was less than 800, was it not?

A. Yes, I should say that it was.

Q. And it would not average more than 200, would it, the way that curve is drawn; practically very little during the half hour and a short rise at the half hour. How is this chart made? In that square between 7:00 and 8:00, how do you determine where to locate that?

A. It is located at the half way point.

Q. At the half way point in the hour; then the average for that period would be where that angle is, wouldn't it?

A. I assume so; some place in there.

Q. That would not exceed 200 for that half hour?

A. I would say it might slightly exceed 200.

Q. About 200?

(No reply.)

Q. And during that period you had six operators and [fol. 9362] there was an average of 63 calls for each one of those operators during that period; is that correct—33, I should say?

A. I think that would be probably about right.

Q. From 8:00 to 9:00 o'clock what is the number of calls indicated by this chart, about?

A. About 1400.

Q. About 1400?

A. Yes, sir.

Q. During that period you have how many operators?

A. We have a requirement of 19 operators.

Q. And you furnished how many?

A. Well, operators were provided, 35 between 8:00 and 8:30 and 51 between 8:30 and 9:00.

Q. Your required number there was 19; what would be the average per operator on that basis if there were 1400 calls during that period—77, wouldn't it?

A. That is right.

Q. Now what is the traffic between 4:00 and 5:00 in the afternoon?

A. There was about 9800 calls.

Q. What between 5:00 and 6:00?

A. About 5000.

Q. And the operators required is how many?

A. 43.

Q. And the average number of calls is 116, isn't it?

A. It is 5000 divided by 43.

Q. That is 116?

A. I cannot do that in my head; I will figure it out if you want me to.

Q. Alright, I wish you would see whether it is correct or not?

A. That is 116; that is right.

Q. From 6:00 to 7:00 the number of calls is how many-

A. About 1000.

Q. The number of operators required is——

[fol. 9363] A. 17.

Q. The average number of calls is 59?

A. I assume that is correct.

Q. Between 7:00 and 8:00 what is the number of calls?

A. Approximately 500.

Q. And the operators required is 10?

A. Yes.

Q. And the average number of calls is 50, is it not?

A. Yes sir.

Q. Now between 8:00 and 9:00 what is the number of calls?

A. Between 2 and 300; I don't think you could read it exactly in there.

Q. And the number of operators required is six?

A. That is right.

Q. And the average number would be 1/6 of, say, 250?

A. About 40 calls.

Q. And between that and 10:00 the average number of calls is what, the average number of calls is what?

A. About 200.

Q. And the number of operators is six?

A. That is right.

Q. And the average number is 33?

A. That is right.

Q. Now, none of those operators during the hours I have called your attention to are working anywhere near 153 calls per hour, that is, the average for that typical instance, are they?

A. No, they are not.

Q. And to that extent there is a surplus of operators on that board, is there not?

A. No, there is no surplus of operators on that board.

[fol. 9364] Q. Why not?

A. The calls during that period are coming in from a large number of lines and there is a very little fluctuation in the traffic from day to day so that we have to allow a larger number of operators during those hours so that they can attend to the calls promptly as they come in during side hours.

Q. That is against the possibility that there may be a sudden peak develop during the night on account of some unexpected happening is that what you mean?

A. Yes. When you have an office such as an office of this kind would be, with approximately probably 10,000 lines, with possibly close to 20,000 stations, the chances for variations and fluctuations in traffic during side hours become very great. You may get a variation——

Q. So great that you have to carry a great many operators who are not working within 20 per cent of their capacity during those night hours?

A. That is the result of very careful studies; we have decided that this is the proper provision for operators to make on a board of this kind.

Q. Now that is not the question I am asking you. The question is, don't you have to pay for a great deal of time during which these operators do not work to anything like their capacity? As a matter of fact, not to exceed one-third of their capacity during most of the time—these hours that

I am mentioning right now and about which I have questioned you?

A. With the exception of the hours during the night—I have stated that during the period from 11:00 o'clock until 6:00 in the morning there is a considerable period of time [fol. 9365] when the calls become so few that the operators are not busily engaged and during that time we assign to this night force such routine duties as testing out cords and work of that kind that keeps them busy, so that their time is used with reasonable efficiency. Of course these girls being in there for all night does not mean that there are six girls in the operating room all night. Every girl is entitled to a rest period during the night. The night is her day's work. She is entitled to a lunch period during the night. So that for a considerable period of the night we would only have four operators taking care of the traffic from, say, in the neighborhood of possibly 20,000 stations.

Q. And excepting for the time when they are taking their lunches or their regular rest periods that they are entitled to, they are now busy during this night period, are they?

A. Yes, they are assigned the various duties to keep them busy during that period.

Q. And they do keep them busy, is that correct?

A. That is correct.

Q. Now you have talked about this night tour from 11:00 to 6:00; how about these hours that I have asked you about which run from 7:00 to 9:00 in the morning and from 5:00 to 10:00 in the evening? They haven't these extra duties during that period, have they?

A. No; during that period the variations in traffic which I have mentioned and the difficulty of handling the calls on several positions rather than on one position keeps the girls during the periods of high traffic busy and during the [fol. 9366] other periods they are available for the calls which may come.

Q. That is, during the hours between 8:00 and 9:00 a girl is as busy handling 50 calls as she is or would be handling 153 calls between 9:00 and 5:00 where there is a full force; is that the distinction you want to make?

A. No, I would not put it that way. In order to get the line signals answered as promptly during that period as during other periods of the day it is necessary to provide this number of operators.

Q. You do not mean to say that these operators are work-

ing to their full or their reasonable capacity, however, during these hours from 5:00 o'clock in the evening until 10:00?

A. Their work is rather different from what it is during the straight hours of the day when the board is full. That is, they have to take calls on more than two or three positions and they have to be available to answer the signals as they come in, taking into account this very large fluctuation in traffic during such hours as I have mentioned.

Q. Now you keep on explaining, but you do not answer my question, which is, are they as busy in handling a full load during the other hours of the day?

A. I don't know as that question can be answered. I told you that their work is different during that period and when you compare two things that are different you cannot answer it with yes or no. As I have explained to you, these girls are busy on things during that period and that their work is somewhat different than it is during the other hours of the day.

[fol. 9367] Q. You want us to understand, if I get your answer correctly, that they are as busy handling 50 calls between 8:00 and 9:00 o'clock, when there are only six on duty, as they are handling 153 calls during the busier portions of the day; is that correct?

A. No, that is just another way of asking the same question that I told you could not be answered yes or no a moment ago. They are efficiently occupied during that period and are necessary to answer the calls promptly as they come in.

Q. During this period you think that they are so busily occupied that it is fair to count this saving of one second on the calls that you have counted in connection with the tinsel cord saving and a saving of half a second on some of the other items you have mentioned in connection with these night calls?

A. Yes; these operators are provided, with the exception, as I have stated before, with the exception that during the period from 11:00 o'clock at night until 6:00 in the morning, the operators are provided entirely on the basis of the number of calls, and if those calls are for any reason made easier to handle the provision of operators would be less. That is, for instance on these calls which you have asked me to read from a curve; this curve, as I told you in my direct testimony, is entirely a curve of the calls originating in a business office, and in reading off the calls that occurred between odd hours of the morning and evening—those calls

might, and undoubtedly were, a very much larger proportion of those calls, from pay stations than would be the case during the business hours of the *of the* day, the offices largely [fol. 9368] being closed, and a great deal of business coming from pay stations, which would mean that an ordinary pay station call is much more difficult to handle, so that the operators are provided entirely on the basis of units and not of calls, and the difficulty in getting this straightened out is in your taking this exhibit, which I put in entirely to show the variation, and trying to use it as a base for adjusting force—and I explained in my direct testimony we would have to have the units and that we would use the units in providing a schedule of operators and that this curve was introduced entirely to show variations in traffic and could not be used for the purpose for which you are trying to use it.

Q. You do use the number of calls per hour in figuring the number of operators to use during a given hour, don't you?

A. No, I have stated repeatedly we do not. We use the units.

Q. I know you use the units, but you use the coefficients in connection with the units that is based on the number of calls?

A. No, the unit is not based at all on the number of calls.

Q. How about your coefficient?

A. The unit is the result of a definite set of studies in which we develop the units, and the units for every class of calls are different, as we have several tables of coefficients applying to different classes of calls to reduce them to units.

Q. Do you want me to understand—it is exactly what you [fol. 9369] have said—that you do not consider the number of calls at all in working out your assignment of force?

A. The number of calls multiplied by the coefficient that applies to those classes of calls reduces those calls to units and then we have a basis on which we start in adjusting our forces.

Q. Then the data that is chartered there is of some value in getting at the number of operators, isn't it? It is the thing from which you start?

A. No, Mr. McConnaughey. We would have our counts made according to the classes of traffic, such as pay station——

Q. What would you count?

A. We would count all of the different classes of calls.

Q. Yes, you would count the calls, wouldn't you?

A. Yes, sir.

Q. Still you say the number of calls is not at the basis of this calculation?

A. No, I would say that the number of calls is reduced to some common term from which we can work, as you cannot provide seven men to build a house regardless of whether it is a brick house or a wooden house, and you cannot provide seven operators to handle so many calls regardless of whether they are pay station calls or flat rate calls.

Q. Now that remark is not germane to this situation because my question has been directed exactly to the typical office that you used in providing these two exhibits as to which you were supposed to have in mind every one of these elements you have mentioned. Now do you have this in [fol. 9370] your mind?

A. I will start all over again. I stated that in providing the requirements——

Q. Well, now, wait a minute. Please answer my question. Didn't you have in mind in all of your testimony and in preparing these exhibits a typical office with all of the elements that need to be considered in arriving at this result in Exhibit 12?

A. Yes, and we considered those and used them, but you insist on going back to this curve which does not contain all of the elements.

Q. I am only going back to that curve for one thing?

A. And it does not show that one thing.

Q. And if it is drawn correctly it is based upon that one thing, the number of calls, isn't it, during these different periods?

A. You have just asked me and I have explained to you that we used all of the elements that apply in the case in arriving at the requirements and all of the elements are not shown on that curve.

Q. Now what are the other elements that have not been exhibited here?

A. The percentage of trunking, the classes of calls, whether they are prepay station calls or message rate calls, all of those different elements enter in to the proposition of figuring the requirements.

Q. Do they enter into the determination of your coefficient?

A. No, they enter into determining the number of units each half hour.

Q. Now you give us these different elements for this actual office you figured on in exhibit 12?

A. The classes of calls that go to make up the calls as [fol. 9371] shown here and the percentage of trunking that applies in the office are the principal elements.

Q. Now, what are they? What are the classes of calls and the number or whatever it is you figure on with reference to this typical office that you are testifying about in Exhibit 12?

A. I haven't any such data as that. I was not asked for it. I was simply asked if I would bring the operators required to fit this office and I provided that as shown on the top line in this exhibit.

Q. You did have this information when you were making this exhibit?

A. Yes, sir.

Q. You haven't it with you, that is what you mean to say?

A. That is true.

Q. You can produce that for us?

A. I would be glad to see if it is preserved. I do not know that it is. I did not consider that as an element. You just simply asked for the requirements. If I can find it I would be glad to. It is nothing but what is used in day to day operation. That is, it can be provided for any office. You can get it for Dayton or any office you would like to see it for. It is nothing but what is set up as standard and any one that is familiar with force adjustment routines would have that and could produce it for most any office.

Q. Suppose you produce a typical exhibit of that kind with all of the data for Dayton, for instance?

A. I haven't any such data as that.

Q. But the traffic department of the Ohio Bell Company doubtless do have?

A. I think so.

[fol. 9372] Q. Now you have testified to certain savings on the audible ringing development, savings in operation, I believe?

A. Yes, sir.

Q. That was developed by the A. T. & T. when?

A. About 1914 or '15. There was previous to that time an attempt made to get the audible ringing system and it had been used in some of our cities for several years previous to

that, but it was not of a type that was uniformly satisfactory, and the present arrangement whereby we feel justified in recommending the equipment was developed during the period of about 1915.

Mr. Burr: Are you now referring to the audible ringing tone?

The Witness: Yes, sir.

Q. How long prior to 1914 or '15 was it in use in any of your offices?

A. Well, to my personal knowledge it was in use as far back as 1910. I haven't any knowledge as to how much previous to that time it had been used.

Q. As a matter of information, in your department in your connection with the A. T. & T. Company, don't you know that it was in use in Chicago as early as 1900?

A. I don't know that, no. I know it was in use in Chicago sometime previous to 1910. I knew it was in use in 1910 because I did some work on it there at that time, but previous to that I have no definite knowledge. We found in that time that it was not of a type which we would consider satisfactory.

Q. But it was in use in Chicago, and continuously in use? [fol. 9373] A. A form of the audible ringing signal was in use in Chicago in 1910 and was continued in use.

Q. Do you know Mr. R. F. Estabrook?

A. Yes, sir.

Q. Who is he?

A. He is the general traffic manager of the New England Telephone & Telegraph Company.

Q. If he states that the audible ringing tone was in use in 1900 you would think that that was probably correct, wouldn't you?

A. Why, the only think I know about the signal was that it was in use in 1910. I don't think my opinion as to Mr. Estabrook's veracity would be very helpful. I think he is truthful.

Mr. McConnaughey: "I think" is a very good answer to that question.

Mr. Shuler: Why do you say you think? Do you have some suspicions about the A. T. & T. or Bell witnesses?

Q. Well, prior to 1914 the automatic ringing was furnished by independent manufacturers, such as Kellogg and the

Automatic Electric, wasn't it—the automatic ringing we are talking about?

A. You are referring to machine ringing?

Q. Yes.

A. Machine ringing had been used in certain installations. We made experiments with machine ringing several years previous to the dates when it was developed to the point where it was satisfactory for general application; and for a few years previous to that time it had been developed to the point where it was satisfactory in offices where there were no party lines. That, of course, limited its usefulness to a very few places, and at the time that it was finally developed [fol. 9374] to a point where it was satisfactory it was adapted to use in offices having party lines, and that work of developing it and adapting it to party lines was carried on by the General Staff. And that information was supplied to the company, I think, as I have stated, about 1912.

Q. However, prior to that it had been used by independent companies in automatic installations, had it not, and manual installations?

A. Not to my knowledge. I know that it had been used sometime prior to that by Bell Companies in offices having no party lines.

Q. Mr. Allen, on page 434 of your direct examination you stated, at the bottom of the page—no, wait a minute; wait until I find the exact place—not at the bottom of the page but the first question that begins on that page. The question is: "Does the Long Lines Department of the American Company have its own traffic engineers?" Your answer was this: "It has a force of traffic engineers who are responsible for carrying on the field traffic engineering work in connection with the specifying of equipment necessary in the operation of the offices operated by the Long Lines Department." Now what offices are operated by the Long Lines Department?

A. Well, I don't know as I can name all of them. The A. T. & T. Long Lines Department operates an office in Boston, an office in New York City, an office in Buffalo, an office in Cleveland, an office in Detroit, an office in Chicago, an office in St. Louis, an office in Kansas City, an office in Louisville, an office in Memphis, an office in Milwaukee, an [fol. 9375] office in Minneapolis, and possibly in certain other places. I am not sure.

Q. What sort of offices are they?

A. Those are operating rooms where Long Distance calls are handled.

Q. Are they conducted in connection with local exchanges in those places or are they entirely separate from the local exchanges?

A. They are separate, under the management of the Long Lines Department, and are not part of the local operating offices in those cities. They are distinct offices.

Q. Are they located in the same buildings?

A. In some cases in the same buildings.

Q. In some cases not?

A. In other cases they are not.

Q. What did you mean, on page 475, when you stated in that same connection: "We have no offices which we operate ourselves."

A. I was talking in connection with local offices and in connection with the General Staff of the A. T. & T. That is, the General Staff operates no offices. I stated in the early part of my testimony, part of which you read, that the Long Lines operating Department was considered by us exactly as one of the Associated Companies, and the General Staff does not operate those offices. That is the Long Lines Department operates the offices I have just mentioned.

Q. Alright. It seemed to me to be a bit inconsistent. I wanted to clear it up.

A. I am very glad you did.

[fol. 9376] Q. Now on page 450 of the record and elsewhere you mention operators wages of the Bell Companies and you have discriminated in your cross-examination between Associated Companies and the Long Lines Companies, between local exchange and toll operators wages, so that your statement is that the system as a whole is spending $105,000,000.00 a year on actual operators salaries; that is approximately correct?

A. Yes, sir.

Q. Most of the work that these companies spent this $105,000,000.00 for could be done by machinery, could it not?

A. Yes, the introduction of machine switching would take care of a great deal of that work which is now being done by operators. There would, of course, be necessary a considerable number of operators to handle special calls, information calls and so on, but a great deal of that would be handled by machine in a city where machine switching was introduced.

Q. You have introduced it in some places?

A. Yes, sir.

Q. On a very small part of it, however, compared to the total number of telephone offices, isn't it?

A. Yes.

Q. You were investigating the subject of machine switching as long ago as 1910, were you not?

A. I think we were investigating considerably previous to that.

Q. Even before that?

A. Yes, sir.

Q. And you personally investigated the system here in Columbus in the year 1910, did you not?

A. No, my recollection is that that was either 1911 or 1912, [fol. 9377] I would not be positive. It was along in that period.

Q. Now you made a careful and systematic investigation of the system that was in operation here at that time, whenever it was?

A. Yes, sir.

Q. You found it working satisfactorily, didn't you?

A. Well, I would have to qualify that. I could not make that statement. We found that it was working with a reasonable degree of satisfaction. There was considerable error and considerable trouble on it, but we found it working.

Q. What kind of error; what kind of trouble?

A. Cases where the subscriber, in attempting to get a number, got wrong numbers or double connections or cut-offs.

Q. A larger proportion of that sort of trouble than on the manual boards at that time?

A. Yes.

Q. It was satisfactory to the subscribers, however, was it not?

A. Yes, I think more satisfactory to the subscribers in Columbus than the manual service was at that time.

Q. You found that about 65 per cent of the subscribers, according to your estimate, were better satisfied with it than they were with the manual board, did you not?

A. I haven't exact data on that point with me, but that is about as I remember the condition.

Q. You testified to that at Indianapolis, did you not?

A. Yes, sir, but I would not attempt to remember the exact percentage; somewheres in that neighborhood.

[fol. 9378] Q. About 65 per cent?

A. Yes.

Q. Did you make any study of the relative cost of the two services here in Columbus at that time?

A. Why, the Citizens Company's records were in such a deplorable condition that we could not make a very definite study. In fact, we could not find out within approximately a thousand stations of how many they had, so that we were not able to make a very decided study as they did not know within some 60,000 calls of how many they were handling and they could not even from their records find out how many stations they had, so that you could not make a very definite cost study.

Mr. Burr: Was Mr. Johnston in charge at Columbus then?

The Witness: He was.

Q. Did you determine the cost of the service, I mean the total cost of the service as it was being operated at that time?

A. No, after we found the difficulty in getting any real figures of that kind we confined our study almost entirely to a study of the grades of service which were being given under the two systems and the feeling of the subscribers as near as we could get it with regard to the two.

Q. Well, you found it to be satisfactory?

A. With the qualifications which I gave a few moments ago; that is, we did not find the grade of service being given which we felt we could give to subscribers in general throughout the country.

[fol. 9379] Q. What was the purpose of that investigation?

A. It was the same purpose that we have continually in mind wherever any new method or new system is originated, either by our own people or by any independent people. We at the first opportunity make studies to find out whether their methods are giving satisfactory service, whether there are possibilities in the method or system for general application.

Q. When was this system in Columbus installed? It was not new at that time, was it?

A. No, sir, I don't know the date of the installation.

Q. Do you recall from that investigation that toll calls were completed over that Columbus switchboard which were

originated in cities or towns outside of Columbus without going through a toll switchboard?

A. No, I did not.

Q. You did not observe that?

A. I don't know just exactly what you mean, as we in general center calls from the small surrounding places to be handled at the larger toll board. I do not know as I get exactly what you mean by that question.

Q. I mean that people in outlying exchanges, towns near Columbus, could dial into Columbus and get connection with Columbus subscribers through the Columbus exchange?

A. Well, I think there were some calls of that kind being handled. I think there were in some places calls originating in Columbus and going through to surrounding towns.

Q. Newark, for instance?

A. Yes, I think the operator in the Neil House handled [fol. 9380] dialed calls directly into Newark without going into the Columbus toll board.

Q. That is the same thing you have claimed as a development of the A. T. & T. Company and figured some savings on, isn't it?

A. No, I don't think that we have in any case recommended allowing a subscriber to dial through toll calls. I don't know of any when—in fact, it would be rather foolish not to have toll calls handled at some point where they could be ticketed and timed so that we could charge for those calls. I have no knowledge of any method of that kind being recommended or considered seriously. There are the vital objections of not allowing us to get revenue for the use of our toll lines.

Q. This call that you talked about from the Neil House to Newark was handled by an operator, wasn't it? It was not the public, was it?

A. Yes, but it was not handled by an operator under suitable supervision with means of timing the call.

Q. That could have been done in that same connection?

A. I don't think it would be very satisfactory or efficient.

Q. What is the thing you do that is different from what was done then in connection with that kind of a call?

A. Calls going over our toll lines would be definitely handled at some board by an operator who would see that

the subscriber got satisfactory service and that the ticket was properly made out and the call carefully timed so that the subscriber was not improperly charged.

[fol. 9381] Q. Wasn't the user of the telephone in this Neil House call to Newark properly charged? Didn't that call go through the operator there and the operator at Newark?

A. We have not in general found——

Q. Now answer my question. We are talking about this call from the Neil House to Newark.

A. I could not say whether those calls were or were not properly charged.

Q. Did you make such a call yourself?

A. I did not.

Q. Do you know whether or not they were handled through an operator here and at Newark?

A. It was my understanding that they were not.

Q. It was your understanding that the operator in Columbus dialed through to the—I do not mean the operator; I mean the subscriber in Columbus dialed through to Newark without the interposition of any operator at all at either place?

A. No, I do not understand that the subscriber did that. It was my understanding that this operator in the Neil House did such dialing, but I would not term her the subscriber.

Q. The operator at the Neil House did. There was an operator in on that call?

A. Yes, the operator in at the Neil House dialed those calls through and purported to time and charge them, but we would not consider that a satisfactory arrangement for handling them.

Q. Now suppose somebody at Newark wanted to call into Columbus and approached the operator there in the same way; what would you say as to that?

[fol. 9382] A. I haven't any knowledge as to any—my statement in general is that the same conditions would hold in either case, that we would think that the call should be ticketed and timed.

Q. What is to prevent that call from being carefully ticketed and timed; that is what I am trying to get at. Here is the operator making the call and with the opportunity of observing the whole transaction.

A. She is rather an unsupervised employe working here

and there, one individual operator at this point, and I would not consider that a very good way of doing that. We have a much better chance to get careful and accurate work down if we have this work done at some centralized point, as you brought out very carefully yesterday, the provision of supervisors in order to get it more accurate, and more efficient work done on the part of the operator.

Q. Now will you explain to us the difference between this Neil House call that you speak of having observed here in Columbus in 1910 and the single ticket system that you have described in this record?

A. The principal difference between them would be that our single ticket method requires carefully ticketing, supervision of the call, to see that the correct person or number at the terminating end is secured and careful timing of the call at a centralized point where all this work is very carefully supervised, whereas the Neil House proposition left that to one operator who was engaged on miscellaneous work, such as completing local calls, and was very likely to be more or less careless in her timing and possibly on occasions forgetting to make out any tickets on the call, [fol. 9383] so that we had no satisfactory check of the way the traffic was handled.

Q. Now suppose we moved that operator from the Neil House to the central office in Columbus, where the operator would be under all of the supervision that is provided there, wouldn't it be exactly the same thing as you are doing now?

A. Well, instead of handling the work at the Neil House it could have been handled at a centralized point. There would be a considerable difference very likely in the types of equipment, circuits and various parts of apparatus that would be employed; that is, we would provide in the central office an accurate timing device which it would not be really efficient to supply at positions where a small number of calls were handled.

Q. Do you mean to say you have a timing device in all of the offices where you use the single ticket method?

A. Practically all of them. I don't know of any where we have not.

Q. Aren't Columbus and Newark such offices as you would provide timing devices for?

A. Yes. That is one of the differences that I am pointing out that you asked me about between handling the work in

the Neil House and handling the work at the centralized point. I have stated that at the centralized point we would have these accurate timing devices.

Q. Now, leaving out the Neil House and just considering the possibility of calling between Columbus and Newark through the exchange in Columbus or in Newark, isn't that just exactly the same thing you now do and claim credit for [fol. 9384] as the single ticket system in all of its essentials excepting the particular method of accounting that is used in the one case or the other?

A. No, I don't see that the thing has any connection or relation whatever.

Q. Now let's see. What is this single ticket method?

A. Well, that is a definite operating method for use at certain of our toll boards that is covered by a definite set of instructions, several pages.

Q. What are the instructions? How do you do it?

A. It is a matter of probably 40 to 50 pages that I haven't any reason for carrying in mind as they would be——

Q. Is that the best answer you can give to that question? Can't you describe the single ticket method in any other way excepting by reading the 40 or 50 pages of instructions that is embodied in some one of these circulars?

A. Yes, I can describe it but I cannot give you the details of the method.

Q. I asked you to state what it was. Now can't you do that?

A. Just what particular description would you like?

Q. Have you several? I want an accurate description of the single ticket method, any one that occurs to you. If you have several give me No. 1?

A. If you want an accurate description of the single ticket method I think it would be much better if I supply you a copy of the circular covering it.

Q. I am not going to let you supply me with a copy. I want you to tell me now what the single ticket method is?

A. Well, it is a method whereby the calls are routed to [fol. 9385] a recording operator who enters the details necessary for handling that call on a ticket, and that ticket is the only one that is made of the call. The call is—that ticket is routed to the dialing board in the handling office and the operator there secures circuit to the called point, secures the station or desired party at the called point, the

operator in the originating office doing the dealing directly with the person or station called, and if difficulty is met in securing the station or securing the person, definite routines are set up in regard to the times and methods of following up that call and as to what report should be left at the terminating office or station, so that if the called party is secured at a later date the two ends of the call can be readily gotten together and promptly, and then at the time when the called station or person is secured and the calling person is called back to his telephone, then this ticket is used by introducing it in the timing device as an auditor's record of the actual amount of time which is consumed by the parties in their telephone conversation.

Q. Now does that call for the use of any peculiar or particular equipment in order to put through a call of that kind?

A. Yes, the equipment on our boards has been designed so that they facilitate putting through a call of that kind. It could be done on various types of equipment but it can be done much more efficiently on equipment that is properly designed to handle traffic by that method.

Q. Now how does that differ from an ordinary toll call?

A. Well, that is one of the types of the ordinary toll calls. [fol. 9386] Q. Now how does that differ from the type of toll call which you have said it was an improvement upon, and against which you have figured it as a basis for this saving that you have talked about?

A. Well, I would like to state right here that I have made absolutely no reference in my testimony to the single ticket method or to any saving resulting from the single ticket method, so that I do not believe that question applies to anything that I have said.

Q. Do you say that there was no such saving by the adoption of that method?

A. No, I say now that there is a considerable saving by it but I never said anything about it before.

Q. I recall, it was Mr. Anthony that testified about that and not you. Now compare it with the method of calling that you do compare it with in order to say that there is a saving by the adoption of that system and tell us what the difference is between those two classes of toll calls?

A. Well, that is covered entirely in the coefficients which are set up and which have been introduced in testimony as

the previous method was called a two ticket method and comprehended the ticketing of the call at the terminating end and doing certain parts of the work at the terminating office, which it was found by improving transmission on our toll lines and by improving the equipment and by the introduction of this new method we could avoid, and by that reduced the total amount of operators time required to handle this type of a toll call.

[fol. 9387] Q. Isn't this a fact. Mr. Allen, that the only difference between those two types of call that you have been talking about is a difference in the accounting method; that in one case you made out two tickets, that is in the earlier practice, and in the later practice you only made out one?

A. No, there is a difference all the way through. It was a complete different operating method that has been recognized in our coefficients, as I stated, because——

Q. Now coefficients do not——

A. We have to have certain conditions in order to make this second method work. When it was first developed it was only found to apply satisfactorily on direct circuit calls to points giving a certain grade of transmission. With the development in transmission it was found possible to extend that method, and by studying the operating methods it was found possible to extend it to different classes of calls, such as calls originating at pay stations and various calls of that kind that previously it had not been possible to handle by this method; so that it was a gradual development of a complete new method and considerable changes in the switchboard design to make that method work satisfactorily.

Q. Now what are the changes in the switchboard design that are necessary to make it work satisfactorily?

A. Well, improved switchboard cords were introduced and new arrangements of keys on the key-shelf, the introduction of what has been termed busy visual signals; a rather complete overhauling of the layout of the board.

Q. What do you cut out of the previous method of opera-

[fol. 9388] tion by this single ticket system upon which a saving is accomplished?

A. Well we save the work at the terminating end of receiving the details and entering them on the second ticket; we save on the part of the operator at the originating end the time which she consumed in passing these details to the

terminating office. We secured the called subscriber more promptly from the fact that we have obviated this detail work so that we save a considerable amount of circuit time between the two offices which was previously consumed by the work of passing the ticket and things of that kind.

Q. Now, weren't all of the essentials of that operation as you have just described it in this call that we have been talking about between Columbus and Newark that you saw in 1910?

A. No, I see no relation between those in types of calls.

Q. Alright. You have not applied your coefficients to that call between Columbus and Newark; I think that is the principal difference.

A. No, I do not believe we would apply it to that call there, Mr. McConnaughey.

Q. Mr. Allen, you have introduced here some photographs of switchboards, Nos. 1 and 2; is 3 a photograph of the switchboard also?

A. I think it was. I think it was a photograph of a switchboard with the operators actually seated.

Q. Oh, yes, that is right. Now those are modern, up-to-date switchboards, as I understand it. That is, of recent date—those pictures?

A. Yes those are a type of board which are in common use, but are not in general use. There are many other types [fol. 9389] of boards. Even in certain offices in multi-office cities there are other types of boards; those are simply types; not by any means the only types of boards which we use.

Q. Now couldn't a photograph showing substantially the same things have been taken in a Bell telephone office as much as 20 years ago?

A. Photographs could have been taken in Bell offices but they would not have shown many of the things that are shown on those boards.

Q. What would they not have shown if they had been taken 20 years ago?

A. There have been considerable changes and improvements during that period.

Q. I am talking now about—my question includes substantially the same?

A. Exhibit No. 2, which I showed you, which you have just discussed very thoroughly here, showed mechanically

locking keys on the B board which made machine ringing possible on B boards which is one of the very important elements in securing operating savings.

Q. Does the photograph show that? Can you see that on the photograph?

A. That one thing would make a board entirely different from the board as it was 20 years ago.

Q. Can you tell from that photograph No. 2 that it is equipped with the machine switching?

A. You mean machine ringing?

Q. Yes.

A. I think any one who had any familiarity with telephone engineering could distinguish that, Mr. McConnaughey.

[fol. 9390] Q. Can you point out the distinguishing features?

A. Here are the rows of mechanically locking keys very prominently shown on the key shelf.

Q. Are these the things right here?

A. Yes, sir.

Q. Any other features that would be different?

A. Oh, many of the features are not shown in detail enough so that I could point them out specifically. The cords on these boards are of course of the improved tinsel cord type.

Q. That don't appear in the picture. I just want you to tell the general characteristics of these exchanges as compared with one 20 years ago, as they appear in a picture?

A. Well, a picture naturally would not show whether a cord was steel or tinsel and these exhibits were put in entirely in order to give a general description of how calls are handled and were not put in with any statement that they showed features——

Q. That is understood. You might answer my simple question and we would save a lot of time. Would'nt a picture of an exchange 20 years ago look substantially like that in its general characteristics? Answer it yes or no?

A. No.

Q. Now how would it differ?

A. It would only look the same in that it has somewhat the same general appearance of an upright board with a key shelf but the details of the board have been largely changed; that is on the face of the board; all of the ar-

rangements for marking the multiple and facilitating the work of the operator has all been thoroughly studied and [fol. 9391] changed and the board in general has been changed and there have been very few items that have not been improved although the switchboard in general has the same upright appearance with a key shelf, but the details have all been changed.

And thereupon a recess was had until 1:30 o'clock P. M. of same day, Tuesday, May 13th, 1924.

[fol. 9392] Afternoon Session

Tuesday, May 13th, 1924.

And also ARCHIBALD J. ALLEN, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

Q. Mr. Allen, on page 453 of your testimony, in your answer on that page you refer to the service which is given to the public through an improvement in the multicount prepayment box; should that be multi-coin?

A. Yes, that should be multi coin.

Q. When was that multi-coin prepayment box put in service? Will you give us the date on that?

A. I don't think I did give any date; I think the original boxes were put in in about 1909.

Q. About 1909? Now were those the multi-coin boxes?

A. Multi-coin prepayment boxes.

Q. In 1909?

A. Yes, sir.

Q. They have been in use ever since that time?

A. They were installed in Brooklyn at that time, about 100 of them, for experimental use and they proved successful and they have from time to time been extended as to use since that time.

Q. Wasn't there a nickel prepayment box in use for several years prior to that time?

[fol. 9393] A. There was. I think it was a No. 7 coin box that had a single slot.

Q. Just for nickels?

A. Yes, sir, just for nickels.

Q. But that was not used generally, was it?

A. It was not of general use at public stations because it was rather difficult, too difficult for toll calls and calls of that kind, which are a considerable percentage of the calls placed at a public station. It would be rather impossible to collect the larger charges all in nickels. It would take a great deal of time on the part of the operator and annoyance on the part of the subscriber and we did not use them for that purpose.

Q. Isn't it a fact that the great proportion of the calls over those boxes are the nickel calls?

A. Well, there are a very large number of toll calls placed at those boxes.

Q. Answer the question. Isn't it a fact that the largest part of the calls coming in over prepayment boxes are nickel calls?

A. Yes, I would say the largest part would be local calls.

Q. That prepayment feature could have been just as well applied much more generally than it was to the advantage of the service, could it not?

A. No, I think not. I think the box would not have been suitable for that purpose.

Q. On page 480 you were referring to records of the amount of traffic and the system of reports and instructions with reference to records of that character, local and toll [fol. 9394] peg count instructions, methods and forms for use in maintaining records. Let me ask you to what extent reports were made to the General Staff of traffic results by the Associated Companies?

A. You say was—You mean are?

Q. Are, I will say?

A. The Associated Companies send us a blueprint copy of the records, summary records as outlined in that exhibit, for practically all of the offices in the various Associated Companies.

Q. Are they complete reports of all traffic?

A. They are the complete summary forms, that is the forms are made up entirely for use in administering the work in the Associated Companies, and an additional duplicate copy is made of the same summary and forwarded to us in New York.

Q. Now, Mr. Anthony testified, I think, in some one of these cases, that it was the practice in Ohio to take peg

counts two days of each month and then at some other special days scattered along through to get representative conditions. Now those reports are all sent in—copies of them—to the General Staff, are they?

A. Well, the Associated Companies many times will take special records for various purposes. The routine counts that are kept each month and which they summarize for their own purposes, we receive a blueprint copy of those.

Q. But any count they have made for some special purpose in some particular exchange you would not expect to receive that unless it was a matter in which you were making some studies?

A. Yes, or a matter in which they wanted to consult us, [fol. 9395] they would send us those.

Q. But the routine reports they do send you regularly?

A. They send us a blueprint copy of such study.

Q. Now, on page 484, you speak of the difficulty of forecasting the amount of business which you are going to do at a certain time; "I use the illustration if we were manufacturing brooms we would decide we were going to manufacture a certain number of brooms in one month, but we can not decide how many telephone calls we will handle. We have to handle the telephone calls that are given to us so that these conditions make the problem or proposition of telephone managing a very complicated one". Is it an accurate statement to say that you decide upon your equipment with a certain assumed maximum capacity for handling the traffic?

A. No, I would say that we decide on it with a certain assumed average condition and we have made studies that would lead us to know how much the possible maximum might be above that, whether it would be a point where we might have to take some special action in providing equipment, that is, we would provide equipment possibly for the average condition of the busy season; we would not take some one busy day or busy week, but the average condition, so that there would be sufficient equipment to handle the average of the busy season.

Q. Figuring that way you expect sometimes to run into a situation where you do not have the operating force or the equipment to quite meet the demand, I assume?

A. Yes. But in general there is enough elasticity in the

[fol. 9396] force and equipment to carry those cases. It would not be economical to provide equipment to take care of extreme peaks.

Q. Now if you should be provided with machine switching equipment you could meet all of those peaks to the limit of the equipment and the question of the operating force would not cut any figure at all in meeting unexpected peaks, would it?

A. The equipment would assume the major portion of the problem in a machine switching office.

Q. The mechanism being just as capable of handling the extremes of traffic or the traffic that was presented at one time as at another?

A. No, you would have exactly the same problem in providing equipment for a machine switching office as to find equipment to handle the average maximum.

Q. With the difference that you would not have to figure on an operating force to the same extent?

A. Absolutely.

Q. Now you refer to the No. 1 C board, which seems to have some particular elements; what are those?

A. The No. 1 C board has the automatic listening, audible ringing signal; on the A cords machine ringing; I think that is about all.

Q. Multiple answering jacks?

A. Multiple answering jacks are not a necessity in No. 1 C; we put those in in particular types of boards where they prove in, but they are not an integral part of it.

Q. Not an essential feature of the 1 C, but they can be [fol. 9397] put in on the 1 C?

A. Yes.

Q. Now what are the characteristics of the No. 1 D board you have referred to?

A. The No. 1 D is a board that is made up to take care of offices that are of a smaller size than the ones where we would provide a No. 1 C board, having largely the same features, but in some cases a cheaper arrangement of equipment, as the equipment is not asked to do quite as many things as in the case of No. 1 C.

Q. What are those things that these 1 D boards are not required to do?

A. I am not an equipment engineer and I would not be able to give you definite conditions in connection with the circuits on any of these boards.

Q. What sort of exchanges are the 1 D boards used in?

A. In offices where the ultimate capacity or ultimate number of lines that are expected during the life of the board—I don't know whether it is 2000 or 3000—some rather small number of lines.

Q. Going back to these reports that are made of traffic results that you were talking about a moment ago, what does the General Staff do with reports that come to them in that way?

A. We make certain summaries of those, certain comparisons of the results that are being obtained in comparable offices throughout the system, and in case of any reports that indicate that something should be done differently we would advise the company and offer to suggest the things that might be done, and oftentimes might result in our going out and assisting the company in improving the results in that given city.

[fol. 9398] Q. That is, if the results do not come up to the standards that the General Staff things they should come up — you make suggestions that will bring them up to the standard, is that right?

A. I would not use that word standard in connection with it because it is rather difficult to say there are definite standards on this. If there are any elements in connection with the summaries that we think would be of assistance to the Associated Companies and we can assist them in any way, we would write to them and suggest any changes we might think proper.

Q. And you, through these reports, aim to keep track of the efficiency of the operation in the companies?

A. We are largely interested in seeing how well the routines which we provide to the companies are working out, whether they are working efficiently, and a study of these reports for that time leads to our seeing where we think some improvement might be made, and in all such cases we supply the company with that information.

Q. Can you tell us the relative amount of the toll business that accrues from public pay stations?

A. That varies a great deal from one city to another. I should say possibly around eight per cent, which might be a good average for the toll business originating in that way.

Q. About eight per cent comes from public pay stations?

A. It varies a great deal from city to city.

Q. And the remainder of the toll business comes from local subscribers' stations, does it?

A. Yes.

Q. Now, quite a number, or a great deal of work of the [fol. 9399] General Staff in the traffic department that you have testified about has to do with toll line properties, doesn't it?

A. Yes, we have a considerable amount of work in connection with toll problems.

Q. And the purpose of that is to establish greater efficiency and economy in the operation of the toll lines of the Associated Companies as well as the toll business of the A. T. & T. Company which is conducted in the local exchange?

A. The work is for all of the toll business, to get more efficient and better toll service, both handled by the Associated Companies and handled by our own Long Lines Department.

Q. And the toll information that goes out to the local companies is of benefit to the A. T. & T. Company in its Long Lines business through its effect on the local exchange board of the toll business, isn't it?

A. Well, it is of advantage to the Long Lines Company in handling the business which it handles.

Q. And also to the Long Lines Company in the superior method in which the local business—the local Associated Companies handle the toll business in the local exchanges, isn't it?

A. Yes, any improvements we find that can be made on the toll switching work, work of that kind is of assistance to the Long Lines on the calls which they handle.

Q. Yes, certainly.

A. Yes.

Mr. McConnaughey: I think that is all, Mr. Allen.

[fol. 9400] Cross-examination.

By Mr. Shuler:

Q. How many general officers are there of the A. T. & T. Company?

A. I only know of the general office——

Q. General officers?

A. I haven't any data that would answer that question.

Q. How many general officers of the A. T. & T. Company are connected with the General Staff?

A. Well, I have in mind a figure, that there are about 1800 people on the General Staff.

Q. Officers?

A. I have no data as to just how many officers there are or just what is meant by officers.

Q. Do you know what the operators wages were in 1923 of the Long Lines Department?

A. No, I do not.

Q. The Long Lines Department do maintain a corps of men superintending the construction and repair of the Long Lines?

A. Yes, they have such a force.

Q. Do you have any idea how many — on that force?

A. No, I have not. That is not in my department.

Q. Do you know what they spent for traffic superintendence of the Long Lines department in 1923?

A. No, I have not. I would not have any details of that.

Q. Would you think it would be as much as $1,300,000.00?

A. I would not have any data.

Q. You are in the traffic department, aren't you?

A. I am in the general traffic, the general engineering [fol. 9401] department.

Q. Haven't you any idea how much you spent for traffic superintendence?

A. Not in the individual companies.

Q. No, I mean the Long Lines?

A. No, I haven't the details; I haven't in mind the details of the traffic expense of the Long Lines Department.

Q. Do you think $1,300,000.00 is too much?

A. I would not have any opinion on that.

Q. Does the Long Lines Department operate a school for telephone operators?

A. They have several schools for telephone operators in the large cities where they operate an office. If the force is large enough so that it is economical to give them their preliminary training in a school they operate such a school, in New York and Chicago and some of those large offices.

Q. Do they have a service inspection department?

A. They do.

Q. Do they have central offices?

A. Yes, sir.

Q. All over the country, do they not?

A. I mentioned this afternoon a dozen or fifteen of those offices.

Q. Do you think that $6,125,000.00 would be too much or too little for operators wages for the Long Lines Department? Well, I will state it this way. The annual report shows that $6,125,375.77 were operators wages paid in the year 1923?

A. I think that is correct.

Q. Are the central office equipment repairs a considerable sum of money, would you think?

[fol. 9402] A. That is entirely outside of my work, so that——

Q. That has nothing to do with the—what did you say?

A. My opinion on that would not be at all helpful because it is entirely outside of the work I have any connection with.

Q. There would be, in your opinion, considerable repairs to central office equipment, don't you think?

A. Yes, sir, they would have a maintenance account that would amount to considerable.

Q. They have quite a large number of operating officials and assistants, do they not, in the Long Lines Department?

A. Yes, they have—they are set up very similar to an associated company and have traffic superintendens, plant superintendents, commercial superintendents with assistants.

Q. They also have service inspectors, do they not, the Long Lines Department?

A. I do not think we have any such term in the service; I think possibly what you mean is service observers.

Q. I am simply using the term as used in the annual report?

A. Yes, that is it.

Q. Service inspectors; they also have supervising foremen, do they not?

A. I think so.

Q. Do they have any men engaged in central office installation and maintenance men?

A. Well, this is entirely outside of anything that I have any personal knowledge of. I am willing to assume that if they have central office, as I know they do, that they have central office maintenance men, but it is nothing that I am familiar with.

[fol. 9403] Q. You would not be surprised if they had line and station construction installation and maintenance men, would you?

Mr. Burr: Suppose he would be surprised?

Q. Do you think that they have? Let us put it that way?

A. I am willing to assume that they have maintenance men out maintaining their pole lines, yes.

Q. They also have a large number of clerical employes to take care of the Long Lines business, do they not?

A. Yes, they have a clerical force.

Q. And they have a large number of operating officials for the Long Lines Department, do they not?

A. Yes, sir; they are set up very similar to an Associated Company. I think you will find that they have most all of the same officials that an Associated Company has.

Mr. Shuler: I think that is all.

Redirect examination.

By Mr. Burr:

Q. Is the schedule referred to this morning by you, Mr. Allen, in your cross-examination, a schedule which you recommend for general use for telephone exchanges in Ohio?

A. No, the schedule which I submitted in Exhibits 12 and 13 was submitted merely to show the difference in the number of people that would be required to provide a schedule where we attempted to follow the traffic hour by hour, and the number of people that would be required [fol. 9404] in a schedule where we assumed we would use the same people throughout the business day. I submitted those two schedules because they showed that fact and because they happened to show a greater excess on the schedule where we attempted to follow the traffic; so that my results would be more than fair to the proposed method of toll schedule with the same number of people throughout the day. I would not submit that as a schedule that we would recommend to actual use in an office of that nature.

Q. Do they represent schedules or are they schedules which are typical of representative conditions in Ohio?

A. No, I know of no offices in Ohio where that would be a schedule used.

Q. Have you prepared a schedule on any different basis than the ones just referred to?

A. Yes, I did prepare a schedule for that same office which would be the schedule which we would recommend to use under the conditions in that office with exactly the same requirements as were shown on the previous schedule.

Mr. Burr: The schedule may be marked for Identification Allen Exhibit No. 14.

And thereupon the Paper Writing above referred to was marked for purposes of identification as Allen Exhibit No. 14 and was admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Allen Exhibit No. 14 and made a part hereof.

[fol. 9405] Q. In what respect does Allen Exhibit No. 14 differ from the schedules which you were discussing this morning?

A. In order to overcome the difficulties in drawing a schedule to fit that particular office which I originally submitted as being a curve from which it was fairly difficult to draw a schedule, we have provided a half hour lunch period for the operators who work straight day tricks. This makes it possible to get out the lunches without having very many excess operators at the beginning and ending of the actual day's work.

I might add right here that a reasonable amount of excess in a schedule is not considered unwise as we have in our forces many new girls, and if we have occasionally two or three operators for a couple of hours in excess of the actual requirements that time can be very well used in giving those newer girls more special coaching in order to improve the service.

Q. Is your schedule marked Allen Exhibit No. 14 a more efficient one than Allen Exhibit No. 12 referred to this morning?

A. Yes, I should say that it is because we have taken advantage of the arrangement which reduces the excess force.

Q. As between the two kinds of schedules which would you recommend for the load curve referred to in your evidence?

A. I would recommend the schedule as in Exhibit 14,

which is typical of the schedules that are in use in offices from where that load curve was taken.

Q. If outside plant conditions are such that residence and [fol. 9406] business lines may combine or mix in one board, is it or is it not good practice to so combine or mix them?

A. From the standpoint of drawing a schedule it generally results in a possibility of drawing a better schedule where we have those two classes of service mixed.

Q. In what respect does the combination of the two render the operating more efficient?

A. It makes the peaks less pronounced. That is, we get peaks in different hours in business and in residence and by combining these we smooth out to some extent those peaks.

Q. Is it or is it not possible or practicable to compare the 153 calls per operator referred to by Mr. McConnaughey this morning with the 53 calls per operator also referred to by him, without knowing whether the calls are pay station, flat rate, measured service, trunked calls or of whatever particular kind or class they actually are?

A. It would be unfair to make a comparison without taking all of those elements into consideration.

Q. Is the City of LaCrosse a multi-office city?

A. It is not. It is a single office city.

Q. Is Dayton?

A. My understanding is that Dayton is a multi-office city, three offices.

Q. Is Columbus?

A. Columbus is a multi-office city.

Q. Cleveland?

A. Multi-office city.

Q. Toledo?

A. Toledo is a multi-office city.

Q. How many Bell stations are there, if you know, in the Columbus Exchange area?

A. It is my understanding that there are about 41,000. [fol. 9407] Q. How many automatic stations are there in the Columbus area?

A. About 19,000.

Q. Was the Dayton State plant, at the time of the consolidation of The Ohio State Telephone Company and The Ohio Bell Telephone Company, equipped with automatic telephones?

A. It is my understanding that it was equipped with an automatic system very similar to the one in Columbus.

Q. Tell the Commission whether or not all long distance calls—by that I mean Bell System long distance calls in Ohio, are ticketed by a toll operator and not an operator at some subscriber's P. B. X.?

A. That is true. We have a small amount of traffic that is completed to stations in towns within a very few miles which we call AB toll traffic in which there is a toll charge, but that is traffic on which there is no privilege of a particular person and where the ticketing is a very simple matter. Aside from that all of the calls are handled at a designated toll board.

Q. Now when you referred this morning to an operator in the Neil House at Columbus, did you mean the operator at the small switchboard in the lobby of that hotel?

A. That was the operator who, according to my understanding, was handling calls to Newark.

Q. Was it your understanding that the same operator handled local calls; that is to say, those from persons in the hotel to persons outside of the hotel in the City of Columbus and vice versa?

A. It was this same girl.

[fol. 9408] Q. Was it your understanding also that she handles calls which were local entirely to the hotel; that is to say, as between one room or one department and another room or department within the hotel?

A. No, it was not. I think they had a separate exchange operator who handled that.

Q. Did you have reference to the board to which the general public in the lobby of the hotel had access?

A. That was the condition.

Q. Compare those conditions, if you please, to the toll operator whom you say tickets every toll call in the Bell System?

A. Well, in that case we have a team of operators who are specially trained in handling those toll calls and are carefully supervised, and in addition to that reasonable checks made so that we know the calls are properly ticketed and timed.

Q. What about interference and interruptions and distractions caused by others in the room where these operators are comparable with the same distractions and interruptions that are encountered in a hotel lobby?

A. Well, things are kept in a very orderly business like manner in the telephone office, and it is impossible to keep things in that same condition ordinarily where the operator has to deal with rushes of patrons or people who merely want to talk and pass the time of day. The comparison would be such that the operator in the hotel, I should think, would have great difficulty in giving proper attention to toll calls.

Mr. Burr: That is all.

[fol. 9409] Recross-examination.

By Mr. McConnaughey:

Q. Did you understand that the only place that call could be put through from Columbus to Newark was at the Neil House station?

A. No; there may have been others. I knew of that particular case. I wouldn't say that there were not any other places.

Q. If a call had been made in that way to Newark at the exchange of the Telephone Company through the toll board, through the operator at the toll board at the exchange, there is no reason why these distractions that you speak of should cut any figure in the matter at all?

A. No, if the call was handled at the toll board that would obviate those things.

Q. Certainly, and if the call was made from Newark at the exchange into Columbus the same thing would be true; that is correct, isn't it?

A. If it were handled at the toll board, yes.

Q. Didn't you know as a matter of fact that it was handled through the toll board at Columbus although the original call was put in at the Neil House?

A. No, that was not my understanding.

Q. What was your understanding?

A. That the call went directly from the operator in the Neil House directly to Newark, without being handled by the operator in the toll room.

Q. Suppose it was originated at any of the subscribers [fol. 9410] other than the Neil House, any place, how would that sort of a connection be made; how was it made?

A. My understanding was that those calls from subscribers stations to a near-by town were handled at the Columbus tollboard.

Q. At the Columbus tollboard?

A. Yes, sir.

Q. And the operator at the Columbus tollboard would make a record and have charge of the call, wouldn't she?

A. Yes, sir.

Q. And if she called automatically in from Newark it would be in effect the single ticket call, would it not?

A. If she only made one ticket out of it it would be a single ticket call.

Q. And it would accomplish the same purpose and do exactly the same thing as this thing we were talking about this morning, this single ticket call developed by the A. T. & T. Company?

A. Well, the ultimate object is to get the connection made and properly charged.

Q. And it would accomplish that thing practically the same way, would it not?

A. If it worked satisfactorily.

Q. Any kind of a toll call is supervised under your system, isn't it?

A. All of the calls which we handle are given supervision.

Q. Yes, certainly. The calls that were made before the single ticket system was devised and which it took the place of—which that system took the place of, as well as the single ticket calls, were supervised, were they not?

A. Yes.

[fol. 9411] Q. And supervision is not any essential feature of this single ticket call proposition?

A. No, I was merely comparing the conditions of the operator in the Neil House. No, my impression—in fact, my knowledge of the Columbus tollboard where we did some work at that time was that they had copied our single ticket method and were attempting to use it to the best advantage they could in the Columbus board at that time.

Q. When did you put that into effect?

A. We started experimenting with the single ticket method about 1907 and applied it a short time after that to certain types of calls and through certain types of circuits, and since that time we have developed it, and, as I stated, this method can be used on still different types of calls.

Q. When did you complete that development to the point where you say it effects the savings that you testified to?

A. I think the last work which made it possible to handle that on certain classes of calls was 1921.

Q. 1921?

A. Yes.

Q. You were 14 years developing that?

A. We developed it and put it in use as the development of the art made it advisable to do so. We found, as I said this morning, that it requires a certain grade of transmission over the toll lines and we found that under certain conditions of management it was possible to extend that to apply to collect calls. The application of the single ticket method to the collect calls was about the last development. That is the one I had in mind that was made in 1921.

[fol. 9412] Q. What do you mean by a collect call?

A. A call in which the party putting in the call requests that the charge be made to the person called or the station called rather than to the originating party.

Q. What additional machinery or what additional feature does that require in the system?

A. It requires a definite set-up so that those tickets will be properly made out and carried through to the auditing department, so that the party being called is charged with those calls.

Q. That has nothing to do with the actual making of the call, however?

A. The subscriber who makes the call is not in any way asked any different questions.

Q. It is just a question of what is done with the ticket after the call is completed, isn't it?

A. It is a matter of setting up a proper routine so that those calls are properly handled.

Q. That was the result of the 14 years of development?

A. No, that was the last development which made it possible to handle practically all of the calls and avoid—simplify the training of operators so that they could handle a certain number of calls with less labor.

Q. Tell us to what calls that system is applied at the present time, what class of calls?

A. Well, we use it on all of the fairly long-haul toll traffic; where we have certain traffic to nearby towns we have developed a method which is known as the two number method, and which makes a still further saving in operators time, and the single ticket method is in general use in traffic to points possibly not over 30 miles apart.

[fol. 9413] Q. But all toll lines where it is more than 30 miles apart, that would be a different situation?

A. We consider all of the conditions surrounding those things. But in general it is used on the large bulk of telephone calls.

Q. Where you do not use that system what do you use?

A. You might use the system I first mentioned, the two number.

Q. That would be for short haul calls?

A. All of the rest of them——

Q. Not the single ticket method?

A. We have some where we use what is known as the dispatch method of handling those calls which gives a still higher grade of efficiency than can be given by the other.

Q. What is the dispatch method?

A. That is a method which has been developed in the past few years whereby we use special equipment on a circuit for passing certain orders and after a certain number of orders have passed we use the circuit then for completion, thereby giving a higher percentage of the team time of the circuit.

Q. What do you do with your tickets in your dispatch method?

A. We use them to bill the subscriber.

Q. I know, but do you have a single or a double ticket there?

A. I think there is some skeleton ticket made. I could not give you the details of the dispatch method.

Q. What was the purpose of the production of your Exhibit 12?

A. I introduced Exhibits 12 and 13 to show the difference in the number of operators which would be required to operate this office if we arranged to cut down the force during [fol. 9414] the afternoon hours as much as we could to meet the falling off in traffic as compared with a schedule where we used the same number of operators through the business day with the exception of the lunch period.

Q. That is what I understood. Now what is this Exhibit 14?

A. Exhibit 14 is a schedule that I prepared to show just about the actual schedule that we would advise putting into an office having the particular traffic curve——

Q. Wasn't——

Mr. Burr: Having the particular traffic curve of what?

The Witness: That was introduced as an exhibit of the business office.

Q. Wasn't Exhibit 12 supposed to do that same thing?

A. No. Exhibit 12, as I stated both at the time that I entered it as an exhibit and have stated it repeatedly here under cross-examination, was introduced solely for the purpose of showing the comparison between those two types of schedules and was introduced because I previously stated it showed a larger excess in the schedule so that it could not possibly be considered as anything except referring to that method of drawing a schedule.

Mr. Burr: Hadn't it reference to Mr. Shuler's method?

The Witness: Entirely, and that is what I stated at the time I introduced the exhibit.

[fol. 9415] Q. You also stated that that Exhibit 12 was an exhibit of an actual exchange in operation, didn't you?

A. I stated that the exhibit curve—I don't know the number of the exhibit——

Q. 9?

A. Was a curve showing the variation in the traffic in an actual office.

Q. Didn't you also make the other statement I have just quoted, that Exhibit 12 was also an actual exhibit of the schedule which had been prepared for that office?

A. It was a schedule which I had brought to introduce along with Exhibits 12 and 13 to show the condition in the number of operators required if we build a schedule cutting down the number of operators when the traffic came down as compared with carrying the same number of operators throughout the day and it was introduced for no other purpose.

Q. This is for the same purpose, is it not?

A. No, this is a schedule which we would recommend as a reasonable schedule to use in this office.

Q. And wouldn't you recommend the schedule that you introduced as Exhibit 12? That was a schedule which you prepared with reference to the curve you had before you?

A. For the purpose of comparison with the schedule where we used the same number of operators during the day.

Q. Now your explanation would be that Exhibit 12 was

better than Exhibit 13, is that it, but not as good as it ought to be?

A. That Exhibit 12 showed that by following the curve of traffic and reducing the force during the hours of the business day when we received less traffic we could operate [fol. 9416] with less people than though we assumed we would use the same number of people throughout the operating day.

Q. This is based on that same curve, Exhibit 14?

A. Exhibit 14 is based upon the same requirements but is drawn to fit the condition which we would recommend in this office.

Q. You figured it a little closer, is that it?

A. No, I figured it at an entirely different basis. I figured this as an exhibit of an actual schedule which it would be proper to use.

Q. Then you were kidding us yesterday, weren't you?

A. I hope not. If so, it was entirely unintentional.

Q. I understood you to produce that exhibit yesterday for the very purpose you now say you produce this one for; when did you prepare that exhibit?

A. I stated repeatedly to the contrary. Those schedules were prepared at that time and I introduced them for comparative purposes.

Q. Have you some more schedules there to introduce?

A. I have some more schedules. I haven't any to introduce.

Q. Have you any more schedules? Let us see them.

A. What?

Q. Based upon those same requirements?

A. Yes, I have one other schedule based on those same requirements.

Q. You were asked to produce one based on a residence office. Did you prepare it?

A. I have one here if you would like it.

[fol. 9417] Mr. Burr: It may be marked Allen Exhibit No. 15.

And thereupon the Paper Writing above referred to was marked for purposes of identification as Allen Exhibit No. 15 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

The Witness: This exhibit is for the same typical business office prepared according to the earlier method but with the half hour lunch so that it could be compared directly with Exhibit No. 14.

Mr. Burr: This is not one you would recommend?

The Witness: No, I would not recommend it.

Mr. McConnaughey: This is a residence schedule prepared according to Mr. Shuler's suggestion?

The Witness: No; read my answer.

(Answer read.)

By Mr. McConnaughey:

Q. Have you one there for a residence office?

A. I have a study for the typical residence office for which the curve has previously been produced.

Q. Now is this the one that you recommend?

A. Yes, this is a schedule which could be applied in the office having that particular traffic.

Mr. Burr: It may be marked Exhibit 16, Allen Exhibit 16.

And thereupon the Paper Writing above referred to was [fol. 9418] marked for purposes of identification as Allen Exhibit No. 16 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Is this your final recommendation, that is what I want to know?

A. This is a schedule which could be used——

Mr. Gentsch: Can't you answer the question yes or no without a big long speech every time?

Mr. Burr: This witness is doing very well, Mr. Gentsch.

Mr. Gentsch: I submit to the Commission that this witness has not answered a single question yes or no that could be answered that way. Every time it is a speech. It is never yes or no.

Mr. Burr: You don't know enough about the telephone business to know whether it could be or not.

Mr. Gentsch: I know enough about it to know whether a question can be answered yes or no. I submit that the witness ought to be instructed to answer questions yes or no when they are susceptible of that kind of an answer.

Commissioner Maullar: If this answer is responsive to the question, that is all that is required.

Mr. Gentsch: It is not responsive.

(Question and answer read.)

The Witness: I have not been asked to make any final recommendations. I was asked by counsel to produce requirements, operator requirements for this office, and I [fol. 9419] have tried my very best to comply with that request and I would say that this schedule I would be glad to finally recommend, or recommend it in any way that you would like to have me.

Q. You were also asked at the same time you were asked for this schedule to produce a business office schedule in exactly the same language and for exactly the same purpose, and you have produced two schedules. Now have you produced two of these residential schedules?

A. I beg leave to correct that. I have at no time been asked by any one in connection with counsel to produce any schedule. I was asked if I would show at my return the operator requirements for this business curve and the operator requirements for the residence curve, and I have produced that, and on every one of these schedules which I have submitted, on the line "Operator requirements" are exactly the same figures on every schedule I have introduced. That is all I was asked to introduce, and the others, the actual tricks, were introduced for an entirely different purpose and not at any request of counsel.

Q. Then on your residence schedule, you have only one schedule, have you?

A. I have just introduced the residence schedule that you have before you.

Q. Have you any other residence schedule that fits these requirements?

A. No, I haven't any other residence schedule that fits those requirements.

Q. Alright. Now you say it is not fair to compare the 50 calls in the non-busy hours with the 153 in the busy hours [fol. 9420] because of lack of knowledge as to the class of calls. Have you made any assumption or had any data with reference to the class of calls in preparing any of these schedules?

A. Yes, these schedules were prepared from the actual units during the different periods of the day.

Q. On an actual day?

A. On actual units.

Q. Was it on an actual day's business? That is what I am trying to get at?

A. No, ordinarily we would have the average of several days in a curve of that kind, not on any actual business.

Q. And this is based on the average of seven days is it? Is it actual experience or is it purely theoretical.

A. No, it is the actual results.

Q. That is what I understood. So that all of the elements that you have mentioned of the different classes of calls that might effect this comparison are considered in these figures?

A. Yes; the only point I wanted to make clear was this, you could not go back to the curve and assume that those were units on that curve. Those are calls and would have to be reduced to units before you could build a schedule.

Q. Because of these differences in the character of the calls?

A. Yes, sir.

Q. But that was all taken into consideration in your study, wasn't it?

Mr. Burr: Which study?

Mr. McConnaughey: The study which produced these exhibits, if there was one.

[fol. 9421] The Witness: I do not call that a study. The actual units for each half hour were derived and on the basis of those units the schedule was drawn. That is something that was done as a routine in all of these exhibits where the schedules were built.

Q. And each half hour's calls noted, the number of trunked calls and the number of toll calls and the number of different classes of calls which would make any difference in the calculation?

A. Those all have to be taken into consideration.

Q. They were all noted as a basis of this schedule, were they?

A. Yes.

Q. Now let us have the report of the number of calls that entered into this preparation, into the preparation of this schedule?

A. I haven't any such data. I was not asked for any data of that kind and did not know of any reason why it would be useful. So I haven't any such data.

Q. You did not produce it?

A. No; we talked this all over this morning and I suggested you get such data from the Ohio Company if you would like it.

[fol. 9422] And also W. T. ANTHONY, recalled for purposes of cross-examination, continued his testimony as follows:

Cross-examined by Mr. Dotson.

Mr. Burr: Before the cross-examination of Mr. Anthony commences I should like to ask him whether or not he has prepared and has with him the information requested by Mr. Dotson?

The Witness: Yes, I have such information. I have a list of questions which Mr. Dotson submitted. I can read those and give the answers if that is satisfactory.

Mr. Dotson: It will be satisfactory and it will save me propounding them again if you will do that, Mr. Anthony.

The Witness: The first question is:

"On what data are the Anthony Exhibits based?"

The Anthony Exhibits are based upon actual records of the Company for the year 1923. I have in mind my exhibits on savings.

Question. We would like to have a detailed outline of the design of the local training switchboard for both A and B.

Answer. The design of local training school switchboards is covered in detail in Traffic Circular No. 133, which I placed in evidence during my direct examination. The B Board equipment required for that training is also [fol. 9423] covered in the same circular.

By Mr. Dotson:

Q. You do not remember the exhibit number?

A. Yes, Anthony Exhibit No. 1.

Question. Why should they differ as between cities?

Answer. The provision of local training school equipment will differ as between various cities due to different classes of service, to a difference in the losses from the operating forces, the net growth in the operating force; the requirements will vary according to the size of the exchange, the

number of offices in the exchange area, and the location of the training school equipment has a bearing on the arrangement of the equipment.

Q. Speaking now of the location of the training school, do you mean the location as related to the location of the exchange?

A. No, I have in mind, Mr. Dotson, that the layout of your school depends to a large extent on the floor space available for the school. We do not always have the same amount of space or the same division of space between offices.

Q. These schools are located and conducted in connection with the local exchange, are they not?

A. That is right, yes, sir.

Q. Do you mean, for instance, in a locality like Toledo where there are branch exchanges, the school is connected with the main exchange or with some branch exchange?

A. In the case of Toledo all of our operators are trained in the schho- located in the same building as the Main Exchange in the Spitzer Building.

[fol. 9424] Question. We want to know wherein this equipment would differ, for instance in Toledo from that in Columbus or Youngstown or Dayton.

Answer. I think my answer to the previous question would answer that question.

Q. You mean then you adopt your previous answer as an answer to this question?

A. Yes, sir.

Question. In what way does the toll fundamental plans or plan effect the traffic conditions?

Answer. Results of the toll fundamental plan provide the traffic department with information on the following points:

a. The economical number of toll centers in the territory.

b. The particular exchanges that it is economical to operate as toll centers.

c. The economical assignment of tributary offices.

By tributary offices I mean an office that does not operate its own toll. It is economical to keep the number of exchanges handling toll traffic at a minimum and we find it economical to serve as high as 15 or 20 or 25 small exchanges from a large exchange. The subscriber in the smaller ex-

change will place his call and that call is transmitted to what we call the toll center, where a toll operator writes the ticket, times and supervises the call.

Q. About how large are those exchanges that are handled that way?

A. Well, there is no general rule, Mr. Dotson; it is a matter of cost. Also a question of the amount of toll traffic [fol. 9425] a given exchange may originate; also a question of the location of that exchange. A small exchange may be from a circuit standpoint a good point for switching traffic, in which case we would probably make it a toll center, whereas if it were not a good switching point we might make it a tributary of a larger office in that vicinity.

d. The economical toll operating method that should be made effective between various points, that is, in connection with our toll fundamental plans, would develop information as to whether we should have cable or open wire between two exchanges, and there is some difference in the cost of construction there and if the construction can be gotten cheap enough we will introduce what we know as a short haul toll method, AB toll, which gives the public a non-delayed toll service. They remain at the telephone after placing the toll call.

e. The estimated number of toll circuits between various points for the period studied, usually a 15 year period.

f. The type and ultimate size of the toll switchboard for various exchanges in the territory; that is, our toll fundamental plan gives us a very good indication of the amount of toll traffic we can expect 15 years hence in our various exchanges, and having that information available, we are in a position to specify the type of board that will be adequate for the requirements for a 15 year period. Otherwise we might instal a board we would outgrow in five or ten years, making it necessary to replace it.

Q. Well, as the growth of the business utilized the ca- [fol. 9426] pacity of the board, to what extent does your fundamental plan contemplate keeping the capacity of the board 15 years in advance of its requirements?

A. The point I had in mind was this, Mr. Dotson; let us assume that we are considering Findlay, Ohio, and we have a new office in mind for Findlay, say. We might, without a toll fundamental plan, instal what we would call a low type tollboard that would be adequate for a certain number

of toll lines. However, a toll fundamental plan might indicate that the toll lines required in Findlay 15 years hence would require a board having a greater capacity, in which case we would instal in initial installation the type of board that would serve us 15 years hence.

Q. How can you determine the different types of board which you have mentioned, as to which you would select without a fundamental plan?

A. Well, we make our—we make the best estimate possible if we haven't that information available, but that is why we make—that is one of the reasons for making a toll fundamental plan, to have such information available and to minimize false work.

Question. If a fundamental plan takes care of the force requirements for 15 to 20 years, how often is a fundamental plan made?

Answer. A fundamental plan is not made for the purpose of getting the force requirements 15 or 20 years hence. However, if we had occasion or wanted to know how many people we would have in a certain office 15 years hence, the information shown in the toll fundamental plan would provide a basis for obtaining that data. That is, we would in [fol. 9427] our toll fundamental plan determine the number of switchboard positions required 15 years hence, and the number of operating employes has a fairly definite ratio to the number of switchboard positions.

Mr. McConnaughey: What is that ratio?

The Witness: Well, it will vary with different types of exchanges. It will run between 2 and 2.8, some place in there.

Question. What proportion of the total cost of the fundamental plan does the part covered by traffic bear to the total?

Answer. I do not know. I have never seen a distribution of expense according to the department along that line.

Q. Do you know whether there are any records kept by the Company from which such information can be secured?

A. No, I do not think we could get that accurately, Mr. Dotson, for this reason. Take in the traffic engineering office, for instance, it is not possible, it is not practicable to assign a man to one job exclusively for a period of, say, two or three months. There is certain routine work that must be done and it would be very difficult to apportion ac-

curately a man's time to the various general studies he makes. We always have a number of general engineering studies under way and where studies are of a general nature we do not try to apportion the cost definitely.

Q. Well, Mr. Anthony, what kind of information do you assume would be necessary for you to have, or any one to have, in order to answer that question, in order to formu-
[fol. 9428] late a statement which will show the proportion of the total cost of fundamental plan in relation to the part covered by traffic?

A. Well, it would be necessary to keep a detailed record of the time of each employe engaged in the fundamental plan. Part of his time might be taken up in some other investigation.

Q. You do not think the Company has a record in such form as would enable you to secure the information to enable you to answer the question as it is put?

A. I think not, Mr. Dotson.

Q. Alright; proceed.

A. Question. What was this cost in Toledo when the last fundamental plan was made?

Answer. I presume you have in mind an exchange fundamental plan?

Q. Yes.

A. And the same answer would apply in that case. I have no such information.

Question. When was the last fundamental plan made?

Q. For Toledo.

A. I presumed you had in mind Toledo.

Answer. The last fundamental plan for Toledo was made in 1920.

Q. That was prior to the consolidation of the two telephone systems?

A. Yes, but it took into consideration the merged requirements, so that it is on a merged basis.

Q. Then the fundamental plan prepared at that time answers the merger purposes of the company?

A. That is right.

Question. How do you check your single ticket method for accuracy; in other words what is the control?

[fol. 9429] Answer. I presume you had in mind in connection with that question the writing of the ticket at the originating office. Our service observing provides means for such a check.

Q. In your answer you used a term that I think we ought

to know a little more about, when you say that is done by service observing.

A. I mean this, that as a general proposition we make observations of our local and toll service observing actual calls.

Q. Who makes that observation?

A. The traffic department of the telephone company in all detail, and a record is kept of those observations.

Q. What does this record show?

A. That shows the entire progress of the call. It shows the calling number and the called number, and the detailed steps of the call.

Q. Meaning the time consumed in placing the call and the period of time the conversation covered?

A. That is right. In the case of toll it shows when the subscriber was connected or when he was given a report, in case his party could not be reached. It shows the reason for not completing the call, for instance, "Busy line," or "Don't answer," or "Out of town," or whatever it might be.

Q. That data is prepared by the calling operator, is it not?

A. No, the service observing is done by special service observing operators who are located as a rule in a room separate from the toll switchboard.

Q. Do these observing operators observe every call that is placed? Is that their specific duty, in other words?

A. Oh, no, we do not observe every call that is placed. [fol. 9430] We observe enough calls so that our people know that they are getting a representative picture of the service.

Q. These observing operators supplement their own observation with the observations or knowledge of the operator who handles the message?

A. No, that is another feature of the work. We do what we call central office instruction work where we have special instructors observing the progress of calls, especially those calls handled by new operators, and if upon completion of a call the observer or central office instructor finds that the operator has made an error of some kind, the call is discussed with the operator in order to assist her in the future.

Q. But a case of that kind is not included in the check you make of your single ticket method?

A. The point I make there, Mr. Dotson, is this, that we have a check on that ticket for those calls that were observed and that number of calls is sufficient to indicate to us what sort of a job is being done, and if we have occasion to check

the writing of tickets in any particular office the service observing facilities provide a means for doing that, as we could check every call that is made, getting a 100 per cent check on it.

Question. Referring to the No. 1 C board, as we understand it this is the full feature multiple lamp board. What is the average time to complete an A Board call?

Answer. I think Mr. Allen in his testimony gave a figure of 8½ seconds.

[fol. 9431] Mr. McConnaughey: 8.7.

The Witness: I thought he said 8½.

Mr. McConnaughey: He said 8½ originally and he said he had verified it.

The Witness: I think he said 7 second- originally, his original figure. In his original figure he said he did not have a record of it but it was his recollection that it was 7 seconds, and yesterday I believe he said in verifying that he found it was 8 seconds. That was on the LaCrosse board, and I think he said 8½ seconds on the Youngstown board, which is a 1 C board.

Mr. McConnaughey: 8.7.

The Witness: We have no occasion to use such a figure. I do not know anything about it. The A. T. & T. do all of the time study work and we are concerned with what is known as a coefficient or the load.

Q. You mean now to refer us to Mr. Allen's answer on that?

A. That is right. We make no studies in Ohio. We use the coefficients developed.

Question. What is this in traffic units and what is a traffic unit?

Answer. The basic coefficient for a 1 C board is 8.7 of a traffic unit. In setting up the traffic coefficients the A. T. & T. Company has designated as a traffic unit the work required to complete a flat rate call direct in a A board multiple. That is known as a coefficient of one, of one unit.

Question. What is the answering time on a board equipped [fol. 9432] with a traffic distributor?

Answer. The answering time on a board equipped with a traffic distributor or any other kind of a board depends entirely on the provision of operators; that is, the number of operators provided at the switchboard, and the switchboard has—the design of the switchboard—no bearing on that.

Mr. Dotson. Read that answer.

(Answer read.)

Mr. Dotson: Alright.

The Witness: Question. How does it compare with the No. 1 C or full feature manual?

Answer. As I stated in the preceding answer, it is entirely a question of the number of operators provided, and as Mr. Allen stated yesterday or today in studying the various types of switchboard we always do it on the basis that we will give the same grade of service regardless of the type of switchboard. The rest of it is a matter of cost.

Question. How many traffic units or what portion of a traffic unit is utilized in completing a call on this type of board?

Answer. I presumed that has reference to the 1 C board, and that is .87 of a traffic unit, as I said in one of the previous answers.

Question. How does it compare with full automatic and auto-manual operation, covering comparison by traffic units?

Answer. There is no operator involved in a full automatic call and a comparison of traffic units on a manual board and the auto-manual board would not be a fair comparison [fol. 9433] for the reason that the auto-manual is a partial automatic system. It is a different type of switchboard.

Q. It would make a difference, would it not?

A. Yes, I think there would be a difference. I don't know what it would be exactly.

Q. Could you make any comparison whatever?

A. Could I?

Q. Yes.

A. No, I don't know. I don't know what the traffic unit is on a manual board. The General Staff of the A. T. & T. Company have made studies. I think Mr. Allen said he made quite an exhaustive study at Lima some time ago and that they never recommended the board. In fact, all of their studies indicated a case could not be made for an auto-manual switchboard. Therefore the Ohio Bell Company has never had occasion to use that type of switchboard.

Q. The Ohio Bell has no means or any records showing what the traffic unit would be on an auto-manual?

A. There may be something in our files. If not, we could get it very easily by getting in touch with the A. T. & T. Company, getting the results of their study. They have studied all of those boards.

Q. Will you please note that and see if you can secure that information?

A. Yes, I will be glad to do that, Mr. Dotson.

Q. Then can you say with reference to the automatic traffic unit—what have you to say with reference to what would be the traffic unit of the automatic switchboard?

A. Of course we do not have an operator in connection [fol. 9434] with the full automatic call, so that I do not know how you would state a figure of that kind.

Question: Under average conditions including the average number of outgoing trunks, what is the practical unit of manual operation?

A. I do not understand your question, Mr. Dotson. That is, the number of outgoing trunks has no definite bearing on the units. I do not know just what you may have had in mind in that question.

Q. Now, just a moment. The question was one propounded by our engineers and neither one of them are here—as they desired some information from your point of view on that matter; so I could not throw any particular light on it other than the question itself.

A. I do not know what they may have had in mind. As I say, the number of outgoing trunks has no definite bearing on the units. They probably had something definite in mind but did not bring it out in the question.

Q. If there is anything to it before you leave the witness stand we will probably interrogate you.

A. I would be glad to answer the question.

Question. Also furnish full details and supporting data of the following:

1. Single ticket toll operating method against two ticket method showing the savings claimed of $570,000.00 in 1923.

The Witness: I might note here that the savings I showed were $570,206.00.

2. Prepay coin boxes showing the average claimed of [fol. 9435] $139,031.00.

Mr. McConnaughey: Is that right, "the average claimed"?

The Witness: Did I say that? The question is, "Prepay coin boxes showing the savings claimed——"

Mr. McConnaughey: You said "average".

The Witness: Of $139,031.00.

3. Machine ringing showing a savings of $267,377.

4. Overlapped ringing showing a savings of $76,318. and showing in what particular this is an advantage to the subscriber.

Answer: 1.

The numbers I give will correspond to the numbers under the question.

1. The savings for the year 1923 due to using the single ticket toll operating method instead of the two ticket toll operating method were arrived at as follows: The number of calls handled was 5,519,900. The saving per call in operating and switchboard expense was 9.52 cents. The saving per call in toll circuit expense was .81 cents. The total of the savings per call for both of these items, that is operating and equipment expense and toll circuit expense, was 10.33 cents; on the basis of the 5,519,900 calls and the saving which we made of 10.33, the total saving was $570,206.00.

Q. That saving, may I ask, represents the reduction in cost of furnishing the service?

A. That is right. The point is that if we did not have in effect during the year 1923 the single ticket toll operating method it would have cost the company for the traffic [fol. 9436] handled $570,206 more than our cost actually was.

Mr. Shuler: Now, supposing, Mr. Anthony, that during the time these calls were going through the girls were never busy and they could have done it by the double call or dispatch method or any other method, then there would not have been any saving at all, would there?

The Witness: The dispatch method is an——

Mr. Shuler: I do not want any dilation. I simply want to know whether or not your saving is not based on this proposition solely, that the girls were always busy making calls and by virtue of the single ticket method they could make that many more calls in a given time, and therefore that would be a saving. But supposing the girls were not busy all the time and by using the single ticket they had a lot of extra time on their hands, then there would have been no saving made at all?

The Witness: Of course if we do not keep our operators busy naturally instead of saving money we would lose money.

Mr. Shuler: Now can you give us the number of operators

you had in your employ devoted to this class of service previous to the single ticket system's introduction and the number you now have in your employ per hundred thousand calls or per thousand calls, I don't care which you make it; it is easy for you to sit down and figure out operator savings but the only way to show savings is to show where the money is or where the money would have gone.

[fol. 9437] The Witness: These savings I showed here represent the actual savings. There isn't any question about it. The point is this if the single ticket method had not been in effect in 1923 we would have organized on the basis of certain loads, which would have required a certain number of operators. Now with the single ticket method we organized on the basis of higher loads per operator, which naturally decreased the number of operators required. Now it is not practicable to get at the matter in the way in which you suggest for this reason, that comparing one year with another you have other variable factors. For instance, you have growth in your toll business. If our traffic remained constant over a period of years and no other changes were made it would be practicable to determine exactly the number of operators—that is, I mean when I say "exactly", from the records—the exact number of operators. But that condition of course will never exist, so that we have to get at it in another way.

Mr. Shuler: Isn't this the simplest way to get at it, to find out how many girls you used to employ and how many you now employ and that will show you the precise saving?

The Witness: You cannot get that, Mr. Shuler.

Mr. Shuler: Why?

The Witness: I say you can only get that under these conditions, first, that over a period of years your toll traffic remained constant, and further that during those same years no other changes were made in the operating conditions. Then, if this were the only change made, annual growth, we [fol. 9438] could take an actual number of operators during the year 1922, or whatever year the method was introduced, and the number in '23, and get at it. But this does represent a saving.

Mr. Shuler: Now you say you organized for this condition; when did you put your organization in?

The Witness: The single ticket method, as Mr. Allen has stated, has been introduced gradually during a long period of years, kept pace with the improvement in toll transmis-

sion, which is one of the things necessary to have under the single ticket basis. I cannot tell you exactly when the method was introduced. It was in effect when the Ohio Bell was organized and I know personally it was in effect seven or eight years ago and Mr. Allen stated this morning it was developed in 1907, and on that basis it has been introduced gradually since that time.

Mr. Shuler: As a matter of fact your toll operators are never busy all the time, are they?

The Witness: Yes, sir.

Mr. Shuler: They are?

The Witness: Absolutely.

Mr. Shuler: As a matter of fact it has been just within a few years you made a change in your toll rates during certain periods of the night in order to increase business, haven't you, when times were dull?

The Witness: There has been a change in the rates, a lower rate during the evening and night hours.

Mr. Shuler: Two changes, two different rates, before 12, isn't it, and after 12 at night?

[fol. 9439] The Witness: That is right.

Mr. Shuler: Just for the purpose of building up business at that time of the day?

The Witness: The main consideration there, Mr. Shuler, is this, we have a fixed investment, plant investment; we have the same amount of plant in the evening and night as we do during the day and by having a differential in our toll rates it makes it possible to use a larger percentage of our toll plant during the evening or night hours than was practicable previous to that time. Operators you can take off, but you cannot take a switchboard position out.

Mr. Shuler: I know that, but if your operators were not busy on toll line service from five o'clock in the evening until seven o'clock the next morning, but had plenty of time to take care of the business, then no saving would be made by the single ticket method to any extent, would it?

The Witness: Oh, yes.

Mr. Shuler: There would?

The Witness: In the first place we do not keep on duty after five o'clock more operators than we need, nor did we keep on duty when the two ticket method was in effect more operators than we needed, and furthermore we get the big benefit of the single ticket method in the busy hours. That is where we save the most money.

Mr. Shuler: But you are claiming the same saving during the dull hour as you are during the busy hour?

The Witness: We get it. I am claiming just what we get.

[fol. 9440] Mr. Shuler: Can you tell us how many operators you had on from five o'clock in the evening until seven the next morning previous to the single ticket method and under the two ticket method? I do not suppose you can.

The Witness: This is introduced over a period of years and the growth of the business and other things would make it impracticable to get such information.

By Mr. Dotson:

Q. Isn't this practically the fact underlying the amount of savings you claimed arrived at in this way, that with the same number of operators after the introduction of the single ticket which you had prior to its introduction you were enabled by the single ticket method to increase the number of toll calls or the amount of toll business which the same number of girls handled over what they would have been able to handle if they had had the double ticket method?

A. Yes, and that is——

Q. And that is another element that exists, and because of the saving in time of handling which was due to that fact, you figured that that difference in time represented a certain cost which you have saved; in other words, if it took an operator under the two ticket method, say five minutes, as an illustration, to handle one call and under the single ticket method it took two minutes, you have saved 3/5 of the time of that call, of that operator, which is available for another call? Now it is upon some such basis as that and considering that element that you have arrived at this saving?

A. That is one way of putting it. Maybe I can make it [fol. 9441] clearer this way. The introduction of the single ticket method decreased the work of the operators 39 per cent. Now if it required 100 operators to handle a given number of calls on a two ticket basis, we can now handle the same number of calls with 61 operators; in other words, we save 39 operators.

Mr. Shuler: Now, Mr. Anthony, this is based on something. Now, isn't it based perhaps on the number of calls a girl can now handle per hour?

The Witness: I think I can give you some information, Mr. Shuler, that will clear that up. With the single ticket method we save 16 approximately 16 units per average call.

Mr. McConnaughey: How do you save them. Will you state that as you go along?

Mr. Shuler: That is what I want.

Mr. McConnaughey: How do you effect that saving?

The Witness: Under the two ticket method the average call required 40.59 units of work. With the single ticket method the average call requires 42.48 units of work. That is a reduction of 16.11 units of work per average call.

Mr. Burr: Let us have your figures again?

The Witness: Yes. With the two ticket method the average call required 40.59 units of work. With the single ticket method the average call requires 24.48 units of work. Now the savings is 16.11 units of work per call, per average call. 16.11, divided by 40.59 calls, is 39.6 per cent, which is [fol. 9442] the per cent reduction in operating work due to the use of the single ticket method.

Mr. Shuler: That does not give me much light. Supposing in an hour's time a girl can make a certain number of calls under the two ticket system. Now you say that that same girl in that same time can do or answer a certain larger number of calls, and then because theoretically she cannot, you say the company has saved some money. Then what we would like to know is on the basis of 5,519,900 calls how many girls are required to make those calls in order to obtain a saving of $5,070,000.00?

Mr. Dotson: $570,000.00.

Mr. Shuler: $507,020.00. Now I want to know what, as a matter of practice, does happen in the exchange?

Mr. Dotson: The amount should be $570,206.00.

The Witness: Well, I haven't worked this out on the basis of operators, Mr. Shuler.

Mr. Shuler: That is my objection.

The Witness: But that would be a result of the method I used. For instance, we adjust our force in this way. As Mr. Allen explained, we determined how many units we must take care of during each half hour period of the day and we supplied operators in accordance with that figure. Now, if, in a given office, we are, say, under the two ticket method of operation, we had 10,000 units during a given hour, we would supply a certain number of operators. However, with the single ticket method that number of operators

is reduced to 6100. Therefore the number of operators required with the single ticket method would be reduced ap-
[fol. 9443] proximately in that ratio.

Mr. Shuler: Here is what I want. You folks can actually show actual earnings, actual losses, without theories. Now if you will give us the number of calls during that year and the number of girls that were required to handle them, what I am trying to find out is whether or not those calls were not handled and could not have been handled under the two ticket system just as easily and efficiently as they were actually handled under the one ticket system, and I believe they can, because I do not think your girls are so rushed that they required the single ticket method.

Mr. Burr: Is that a question or what is it?

Mr. Shuler: I am trying to enlighten him as to what I want.

The Witness: Your statement assumes that until we introduced the single ticket method we did not use our operators efficiently.

Mr. Shuler: No, no, not at all that.

The Witness: I think your statement says that.

Mr. Shuler: No, it does not say that. It is simply this. If you had your girls working to capacity 24 hours a day this item of the single ticket method will eliminate the employment of a certain number of girls but my contention is in actual practice you are not so busy as that and that you make no actual savings at all. In other words, it is the old Colonel Sellers proposition. He has an eyewash; there are 300,000,000 people in India with bad eyes. There is so much theoretical profit in it, but the trouble was that he could not sell his goods. That is the way with your proposition.

[fol. 9444] The Witness: Absolutely not. Let me explain it this way, we know an operator can handle a certain number of units. That has been developed by the A. T. & T. Company.

Mr. Shuler: That is what I want you to show.

The Witness: We have been using their unit system for years and we know what an operator can handle. Now, as I said before, if during a given hour of the day with the two ticket method we must take care of 10,000 units, then we introduce the single ticket method and we cut that to 6100 units, we know that we cut our operating force because the unit capacity of the operator remains the same.

Mr. Shuler: You ask me to take that as a fact. I ask you to show me the figures showing it to be a fact.

The Witness: What kind of figures?

Mr. Shuler: I want the figures for a month showing the number of calls the girls took care of, the number of calls they took on their own trick, and I will show you on your own figures for at least 19 hours of the day those girls could have handled these calls on the double ticket system, and therefore instead of saving this large amount of money you make nothing like that saving.

Mr. Burr: That is about the twentieth speech Mr. Shuler has made and it seems to me fair to the witness that instead of what Mr. Shuler proposes to prove, he ought to propound questions.

Mr. Shuler: I will propound the question now simply. [fol. 9445] Will you furnish me with a record of toll calls for one month, the number of girls devoting their time to that service and the hours of the day when the calls were received?

The Witness: Yes.

Commissioner Maullar: You mean in just one office? You don't want that generally?

Mr. Shuler: Oh, no, just the State of Ohio.

Mr. Dotson: Instead of "me", make it "us".

Mr. Shuler: I want the practice and not the theoretical result.

Commissioner Maullar: Just one office will be alright, won-t it?

Mr. Shuler: Oh, yes.

The Witness: I was going to say more than that would be a laborious proposition. I can give that to you.

Mr. Shuler: Miamisburg, Ohio, will do.

The Witness: This is the second part of the answer to that question. It is No. 2. Savings for the year 1923 due to using prepay coin box method instead of postpay coin box method.

Mr. Burr: You are now directing this to Mr. Dotson's questions?

The Witness: Yes, sir, I am still answering his list of questions.

The number of calls handled during the year 1923 was 24,179,300. That by the way is for Cleveland only. I have not included in the prepay savings anything for the other

[fol. 9446] cities, as the records were not available the day I was working on this.

By Mr. Dotson:

Q. What was that figure you just quoted?

A. 24,179,300 calls.

Q. That is just in the Cleveland area?

A. That is right, in the City of Cleveland. The saving per call in operating is .575 cents. That saving per call applied to the 24,179,300 calls gives an operating saving for the year of $139,031.00.

Q. That saving is determined exactly on the same basis as the savings that you arrive at with reference to the single ticket toll instead of the two ticket method?

A. In general, yes. It is comparing the work, the units involved in one method with the work that is involved in the other.

Mr. Shuler: Now, Mr. Anthony, explain how that savings occurs.

Mr. Burr: Wait a moment. Mr. Shuler, are you the one who was going to undertake the main examination of Mr. Anthony?

Mr. Shuler: No.

Mr. Burr: Is Mr. Dotson the one who is?

Mr. Dotson: No, I am only covering this part of his examination.

Mr. Burr: It would be my suggestion that Mr. Anthony be permitted to finish his answers to Mr. Dotson's questions and that Mr. Shuler follow with his questions.

Mr. Shuler: Isn't it better to clear it up as we go along [fol. 9447] and then you have a connected story instead of a disconnected story.

Mr. Burr: I cannot see that you are clearing it up. You are making a speech on these different questions and arguing the case, but I do not see that we are getting very far in the matter of questions and answers. That is not intended to reflect on you, Mr. Shuler, but——

Mr. Shuler: The trouble with your witnesses is that they do not seem to be able to answer yes or no.

Commissioner Maullar: How many more questions have you there?

The Witness: This is the last—no, it is not. I have two more subdivisions of this one and then maybe a half dozen other questions.